

**Ruud Commercial Achiever® Series
Package Gas Electric Unit featuring
HumidiDry™ Technology**



RKNL-G 13 SEER Series
With ClearControl™
Nominal Sizes 3-5 Tons [10.6-17.6 kW]



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These quality features are included in the Ruud Package Gas Electric Unit

Evaporator Coil/Filter Access

- Return air filters, normally provided, are removed in this photo.



- Non-corrosive plastic condensate pan



Return Air Sensor



Fan Proving

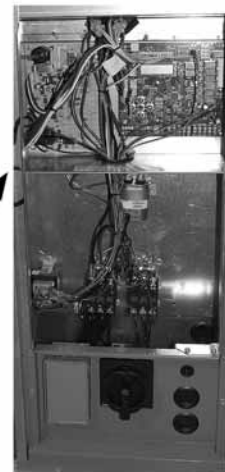
Clogged Filter Switch

Tubular Heat Exchanger

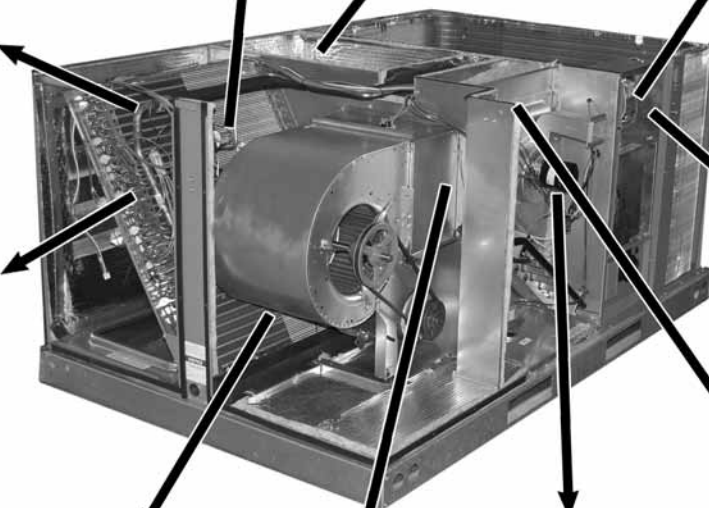
- Aluminized steel (viewed from supply air side panel.)
- Stainless steel available



Control Box Access



Outdoor Air Sensor

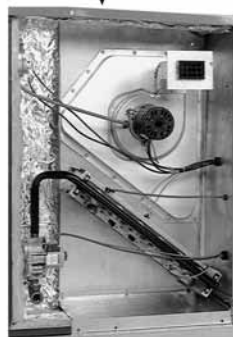


Blower Access

- Belt drive model shown. (Available on 3-phase models only.)



Discharge Air Sensor



Heating Compartment Access



Freeze Sensor

See pages 6 & 7 for HumidiDry features.

[] Designates Metric Conversions



RKNL - G036, G048, G060

RKNL-G STANDARD FEATURES INCLUDE:

- R-410A HFC refrigerant.
- Complete factory charged, wired and run tested.
- Scroll compressors with internal line break overload and high-pressure protection.
- Single stage compressor on all models.
- Convertible airflow.
- TXV refrigerant metering system on each circuit.
- High Pressure and Low Pressure/Loss of charge protection standard on all models.
- Solid Core liquid line filter drier on each circuit.
- Single slab, single pass designed evaporator coil facilitate easy cleaning for maintained high efficiencies.
- Cooling operation up to 125 degree F ambient.
- Easily removable filter, blower, gas heat, and compressor/control access panels permits prompt service.
- Powder Paint Finish meets ASTMB117 steel coated on each side for maximum protection. G90 galvanized.
- One piece top cover and one piece base pan with drawn supply and return opening for superior water management.
- Externally mounted refrigerant gauge ports for easy service diagnostics.
- Easy to install plug-in; slip in, 100% fully modulating economizer.
- Forkable base rails for easy handling and lifting.
- Single point electrical and gas connections.
- High performance belt drive motor with variable pitch pulleys and quick adjust belt system.
- Permanently lubricated evaporator, condenser and gas heat inducer motors.
- Condenser motors are internally protected, totally enclosed with shaft down design.
- 1 inch filter standard with slide out design.
- Single stage gas valve, direct spark ignition, and induced draft for efficiency and reliability.
- Tubular heat exchange for long life and induced draft for efficiency and reliability.
- Solid state furnace control with on board diagnostics.
- Colored and labeled wiring.
- Copper tube/Aluminum Fin coils.
- Factory Installed ClearControl™, Direct Digital Control (DDC) and sensors which can connect to LonWorks™ or BACnet® BAS systems for remote monitoring and control.
- Factory Installed HumidiDry™ Dehumidification System (Refrigerant Reheat).

As part of the ClearControl™ system which allows for real time monitoring and communication, the RKNL-G Package Gas/Electric has a Rooftop Unit Controller (RTU-C) referred to as the ClearControl™ factory mounted and wired in the control panel. The RTU-C ClearControl™ is a solid-state microprocessor-based control board that provides flexible control and extensive diagnostics for all unit functions. The RTU-C through proportional/integral control algorithms perform specific unit functions that govern unit operation in response to: zone conditions, system temperatures, system pressures, ambient conditions and electrical inputs. The RTU-C features a 16 x 2 character LCD display and a five-button keypad for local configuration and direct diagnosis of the system. New features include a clogged filter switch (CFS), fan proving switch (FPS), return air temperature sensor (RAT), discharge air temperature sensor (DAT) and outdoor air temperature sensor (OAT). Freeze sensors (FS) are used in place of freezestats to allow measurement of refrigerant suction line temperatures. The RKNL-G Package Gas/Electric with the RTU-C is specifically designed to be applied in four distinct applications:

The RKNL-G is compatible with a third party building management system that supports the BACnet Application Specific Controller device profile, with the use of a field installed BACnet Communication Module. The BACnet Communication Module plugs onto the unit RTU-C controller and allows communication between the RTU-C and the BACnet MSTP network. A zone sensor, a BACnet network zone sensor, a BACnet thermostat or DDC controller may be used to send the zone temperature or thermostat demands to the RTU-C. The BACnet Communication Module is compatible with MSTP EIA-485 daisy chain networks communicating at 38.4 bps. It is compatible with twisted pair, shielded cables.

The RKNL-G is compatible with a third party building management system that supports the LonMark Space Comfort controller (SCC) functional profile or LonMark Discharge Air Controller (DAC) functional profile. This is accomplished with a

field installed LonMark communication module. The LonMark Communication Module plugs onto the RTU-C controller and allows communication between the RTU-C and a LonWorks Network. A zone sensor, a LonTalk network zone sensor, or a LonTalk thermostat or DDC controller may be used to send the zone temperature or thermostat demands to the RTU-C. The LonMark Communication Module utilizes an FTT-10A free topology transceiver communicating at 78.8 kbps. It is compatible with Echelon qualified twisted pair cable, Belden 8471 or NEMA Level 4 cables. The Module can communicate up to 1640 ft. with no repeater. The LonWorks limit of 64 nodes per segment applies to this device.

The RKNL-G is compatible with a programmable 24 volt thermostat. Connections are made via conventional thermostat screw terminals. Extensive unit status and diagnostics are displayed on the LCD screen of the RTU-C.

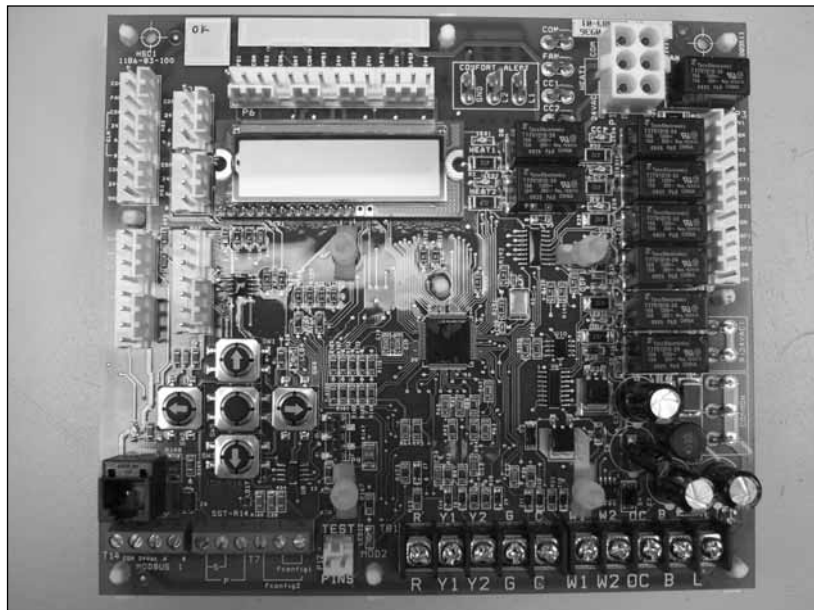
The RKNL-G is compatible with a zone sensor and mechanical or solid state time clock connected to the RTU-C. Extensive unit status and diagnostics are displayed on the LCD screen of the RTU-C.

A factory or field installed Comfort Alert® module is available for power phase-monitoring protection and additional compressor diagnostics. The alarms can be displayed on the RTU-C display or connected to the "L-Terminal" of a thermostat for notification.

The damper minimum position, actual damper position, power exhaust on/off setpoint, mixed air temperature limit setpoint and Demand Controlled Ventilation (DCV) setpoint can be read and adjusted at the unit controller display or remotely through a network connection.

The Space CO₂ level, mixed air temperature, and Economizer Status (Free Cooling Available, Single or Dual Enthalpy) can be read at the unit controller display or remotely through a network connection. Economizer Faults will trigger a network Alarm and can be read at the unit controller display or remotely through a network connection.

RTU-C/ClearControl™



HumidiDry™ Dehumidification System

With the factory installed dehumidification option, in addition to a thermostat or space temperature sensor that is normally present, an indoor relative humidity sensor is installed in the occupied space and connected to the Rooftop Unit Controller (RTU-C) which then controls the capacity of the cooling coil to remove moisture from the supply air and maintain space relative humidity below an adjustable limit visible on the RTU-C display. The default value is the ASHRAE recommended limit of 60% RH.

With this option, a refrigerant reheat coil is installed downstream from the evaporator coil. When the space humidity is too high and reheat is energized, this coil uses some of the heat that is normally rejected to the outside by the condenser coil to instead reheat the cold air from the evaporator coil just enough to avoid overcooling the space. Providing "neutral air" to the occupied space.

Because the demand for dehumidification can be different from the cooling demand, the unit will first satisfy the demand for cooling and then if the space humidity is still too high, dehumidification mode is energized. When in dehumidification mode, the supply air leaving the unit will be near the entering air temperature, but at a much lower humidity. The unit will exit the dehumidification mode when the humidity setpoint is satisfied; or if the load is increased, it will return to normal cooling mode. Reheat is not available during the gas heating mode.

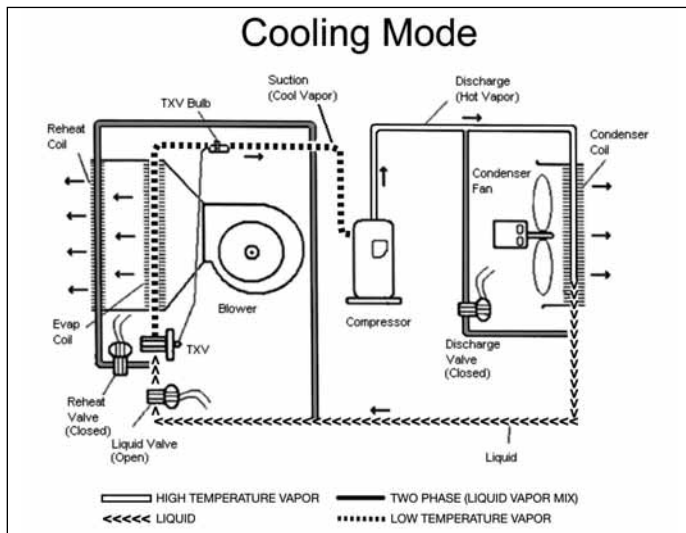


Figure 1 shows the refrigerant path during the normal cooling mode. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature. The superheated refrigerant vapor next carries the heat to the outside coil where the heat is then rejected and the refrigerant condenses into a subcooled liquid where the process repeats itself.

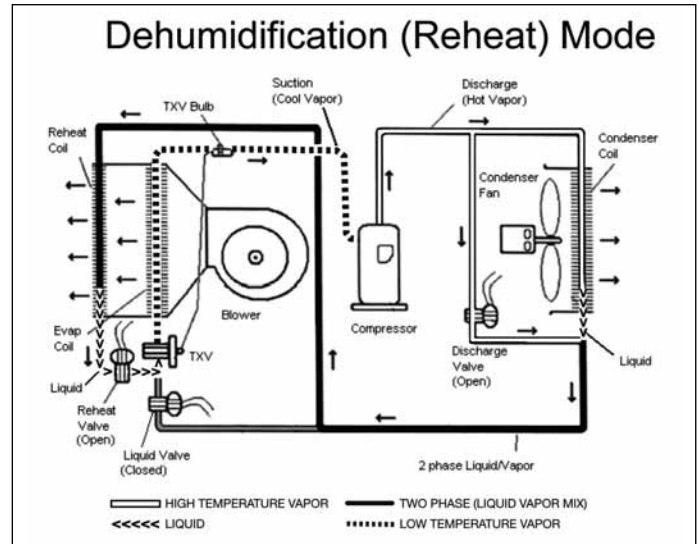


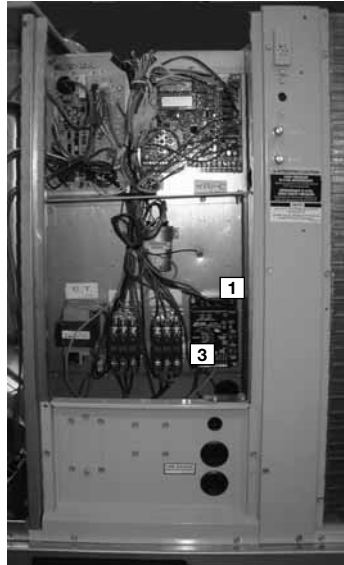
Figure 2 shows the refrigerant path during the dehumidification mode. When the reheat cycle is energized by the RTU-C, a solenoid valve downstream of the reheat coil opens, a solenoid valve ahead of the TXV closes, and a solenoid valve in the compressor discharge line opens. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature. The refrigerant next carries the heat to a parallel path between the outside condenser coil and a bypass circuit. Some of the heat is rejected outdoors. The ratio of heat rejected outdoors versus indoors is controlled by an outdoor fan motor controller (OFMC) on the outdoor fan that monitors the liquid line temperature of the outdoor coil. The OFMC is installed in the unit control panel. This 2-phase refrigerant vapor is then sent to the reheat coil. As the refrigerant travels through the reheat coil it condenses into a subcooled liquid where the process repeats itself.

HumidiDry™ Dehumidification System

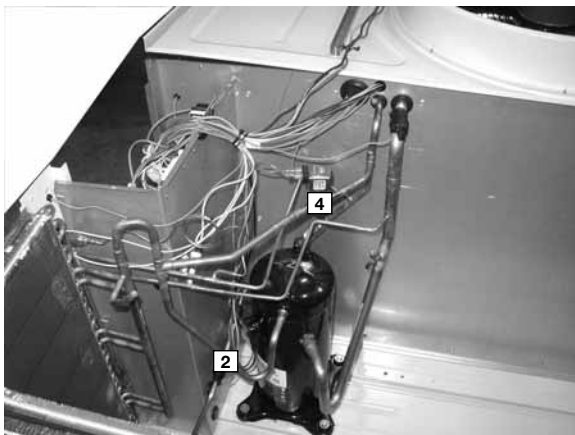
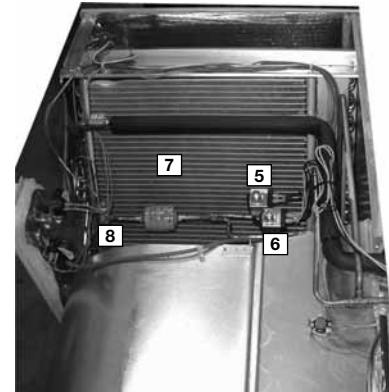
The factory installed dehumidification consist of the following components:

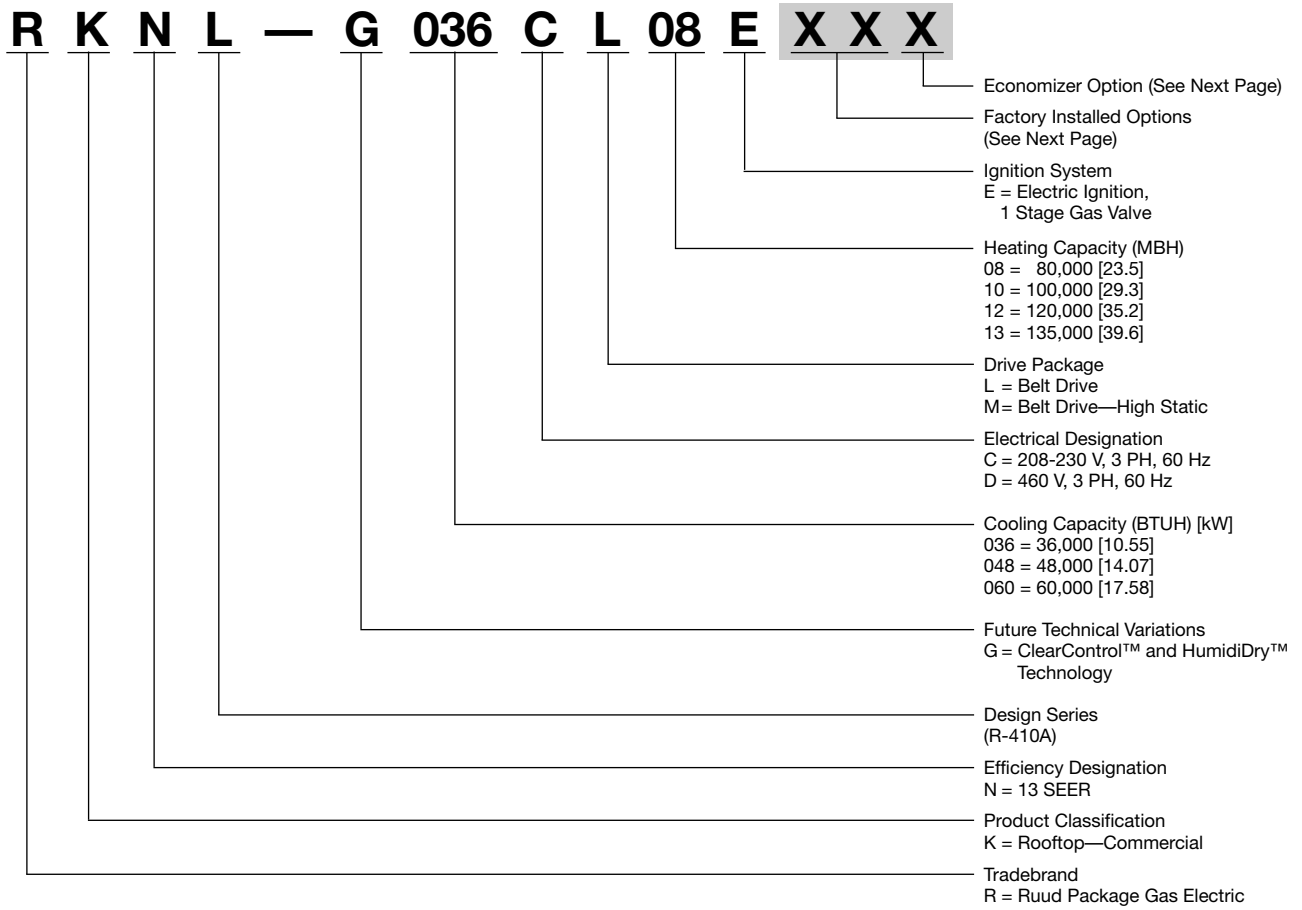
Outdoor Fan Motor Controller, Liquid Line Sensor, Discharge Line Solenoid Valve, Liquid Line Solenoid Valve, Reheat Solenoid Valve & Reheat coil.

During reheat mode the (1) outdoor fan motor controller (OFMC) slows the outdoor fan(s) to increase the liquid temperature to maintain an optimized amount of reheat required to provide neutral air to the occupied space. The OFMC uses a temperature sensor which is located on the liquid line (2) in the outdoor section to determine the temperature of the liquid line. The factory setting for the outdoor fan motor controller is 90° F which will provide neutral air +1 to -5°F from the entering air temperature (example if the entering or return air temperature is 75° F the leaving or supply air temperature will be 76° to 70°F during the reheat mode). If field adjustment is required to raise or lower the leaving air temperature this may be accomplished by turning the temperature control dial (3) on the outdoor fan motor controller (OFMC). Turning the dial to a higher temperature setting will raise the leaving or supply air temperature and turning the dial to a lower setting will reduce the leaving or supply temperature.



When the unit is in the reheat mode the discharge line solenoid valve (4) opens which injects discharge gas into the liquid line increasing the liquid line refrigerant temperature. In the reheat mode the liquid line solenoid (5) is closed and the reheat solenoid (6) is open. This forces the two phase refrigerant thru the reheat coil (7) where it is subcooled and then to the evaporator expansion valve (8).





[] Designates Metric Conversions

FACTORY INSTALLED OPTION CODES FOR RKNL-G (3-5 TON) [10.6-17.6 kW]

Option Code	Hail Guard	Stainless Steel Heat Exchanger	Non-Powered Convenience Outlet/Unfused Service Disconnect	Low Ambient/Comfort Alert
AD	X			
AJ		X		
AH			X	
AR				X
BF	X		X	
BG	X	X		
JD	X			X
JB		X	X	
DP	X	X	X	X

Economizer Codes

B = Economizer with Single Enthalpy

Example: RKNL-G060CL13E**XX** (where **XX** is factory installed option)

Example: No Options

RKNL-G060CL13E

Example: No option with factory installed economizer

RKNL-G060CL13EAAD

Example: Options with stainless steel heat exchanger and no factory installed economizer

RKNL-G060CL13EAJA

Example: Options same as above with factory installed economizer

RKNL-G060CL13EAJD

ECONOMIZER SELECTION FOR RKNL-G (3-5 TON) [10.6-17.6 kW]

	No Economizer	Single Enthalpy Economizer With Barometric Relief	Single Enthalpy Economizer With Barometric Relief and Smoke Detector
A	X		
H		X	
J			X

"x" indicates factory installed option.

[] Designates Metric Conversions

1. Determine cooling and heating requirements at design conditions.

Example:

Power Supply	208/230-3 Phase
Total cooling capacity	42,500 BTUH [12.44 kW]
Sensible cooling capacity	34,000 BTUH [9.96 kW]
Heating capacity	96,000 BTUH [28.13 kW]
Condenser entering air	95°F [35°C]
Evaporator entering air	63°F [17°C] wb/76°F [24°C] db
Indoor air flow	1600 CFM [755 L/s]
External static pressure.....	1.1 in wg
Required efficiency	13 SEER

2. Select unit to meet cooling requirements.

Since total cooling is within the range of 4 ton [14.07 kW] unit and requires 13 SEER efficiency level, enter cooling performance from the RKNL-G048 at 95°F [35°C] outdoor temperature, 63°F [17°C] wb entering indoor air, and 1600 CFM [755 L/s]:

Total capacity	45,100 BTUH [13.21 kW]
Sensible capacity	44,100 BTUH [12.01 kW]
Power input.....	3.6 kW

And also, at 76°F [24°C] db indoor entering air, and using the formula at the bottom of the table:

Sensible capacity	38,327 BTUH [11.22 kW]
-------------------------	------------------------

3. Select heating capacity of the unit.

In the general data tables, note that the heating capacity of the 4 ton [14.07 kW] model with the 135,000 input heater can deliver 109,400 BTUH [32.03 kW], which is suitable for this application.

4. Determine blower speed and power to meet the system requirements.

At the given external static pressure of 1.1 in wg, the belt model must be selected. Enter the belt drive blower performance data at 1600 CFM [755 L/s] and 1.1 in wg ESP:

RPM	1195
Watts.....	755
Drive	M

5. Calculate indoor blower BTUH heat effect.

$$\text{BTUH} = \text{Watts} \times 3.413 = 2577$$

6. Calculate net cooling capacities.

$$\begin{aligned} \text{Net total cooling} &= 45,100 - 2577 = 42,523 \text{ BTUH [12.45 kW]} \\ \text{Net sensible cooling} &= 41,708 - 2577 = 39,131 \text{ BTUH [11.42 kW]} \end{aligned}$$

7. Select model

RKNL-G048CM13E

[] Designates Metric Conversions

NOM. SIZES 3-5 TONS [10.6-17.6 kW]

Model RKNL- Series	G036CL08	G036CL12	G036CM08	G036CM12
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	36,400 [10.67]	36,400 [10.67]	36,400 [10.67]	36,400 [10.67]
EER/SEER ²	11/13	11/13	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]
AHRI Net Cooling Capacity Btu [kW]	35,400 [10.37]	35,400 [10.37]	35,400 [10.37]	35,400 [10.37]
Net Sensible Capacity Btu [kW]	25,600 [7.5]	25,600 [7.5]	25,600 [7.5]	25,600 [7.5]
Net Latent Capacity Btu [kW]	9,800 [2.87]	9,800 [2.87]	9,800 [2.87]	9,800 [2.87]
Net System Power kW	2.84	2.84	2.84	2.84
Heating Performance (Gas)³				
Heating Input Btu [kW]	80,000 [23.44]	120,000 [35.16]	80,000 [23.44]	120,000 [35.16]
Heating Output Btu [kW]	64,800 [18.99]	97,200 [28.48]	64,800 [18.99]	97,200 [28.48]
Temperature Rise Range °F [°C]	30-60 [16.7-33.3]	50-80 [27.8-44.4]	30-60 [16.7-33.3]	50-80 [27.8-44.4]
AFUE%	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	6	4	6
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁴	78	78	78	78
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.91 [1.57]	16.91 [1.57]	16.91 [1.57]	16.91 [1.57]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
Indoor Coil—Fin Type	Corrugated	Corrugated	Corrugated	Corrugated
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]
Rows / FPI [FPcm]	2 / 17 [7]	2 / 17 [7]	2 / 17 [7]	2 / 17 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Re-Heat Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	1/2	1/2	1/2	1/2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	48	48	48
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	96 [2722]	96 [2722]	96 [2722]	96 [2722]
Weights				
Net Weight lbs. [kg]	578 [262]	578 [262]	578 [262]	578 [262]
Ship Weight lbs. [kg]	585 [265]	585 [265]	585 [265]	585 [265]

See Page 18 for Notes.

[] Designates Metric Conversions

NOM. SIZES 3-5 TONS [10.6-17.6 kW]

Model RKNL- Series	G036DL08	G036DL12	G036DM08	G036DM12
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	36,400 [10.67]	36,400 [10.67]	36,400 [10.67]	36,400 [10.67]
EER/SEER ²	11/13	11/13	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]
AHRI Net Cooling Capacity Btu [kW]	35,400 [10.37]	35,400 [10.37]	35,400 [10.37]	35,400 [10.37]
Net Sensible Capacity Btu [kW]	25,600 [7.5]	25,600 [7.5]	25,600 [7.5]	25,600 [7.5]
Net Latent Capacity Btu [kW]	9,800 [2.87]	9,800 [2.87]	9,800 [2.87]	9,800 [2.87]
Net System Power kW	2.84	2.84	2.84	2.84
Heating Performance (Gas)³				
Heating Input Btu [kW]	80,000 [23.44]	120,000 [35.16]	80,000 [23.44]	120,000 [35.16]
Heating Output Btu [kW]	64,800 [18.99]	97,200 [28.48]	64,800 [18.99]	97,200 [28.48]
Temperature Rise Range °F [°C]	30-60 [16.7-33.3]	50-80 [27.8-44.4]	30-60 [16.7-33.3]	50-80 [27.8-44.4]
AFUE%	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	6	4	6
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁴	78	78	78	78
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.91 [1.57]	16.91 [1.57]	16.91 [1.57]	16.91 [1.57]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
Indoor Coil—Fin Type	Corrugated	Corrugated	Corrugated	Corrugated
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]
Rows / FPI [FPcm]	2 / 17 [7]	2 / 17 [7]	2 / 17 [7]	2 / 17 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Re-Heat Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	1/2	1/2	1/2	1/2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	48	48	48
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	96 [2722]	96 [2722]	96 [2722]	96 [2722]
Weights				
Net Weight lbs. [kg]	578 [262]	578 [262]	578 [262]	578 [262]
Ship Weight lbs. [kg]	585 [265]	585 [265]	585 [265]	585 [265]

See Page 18 for Notes.

[] Designates Metric Conversions

NOM. SIZES 3-5 TONS [10.6-17.6 kW]

Model RKNL- Series	G048CL08	G048CL10	G048CL13	G048CM08
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	49,000 [14.36]	49,000 [14.36]	49,000 [14.36]	49,000 [14.36]
EER/SEER ²	11/13	11/13	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]
AHRI Net Cooling Capacity Btu [kW]	47,000 [13.77]	47,000 [13.77]	47,000 [13.77]	47,000 [13.77]
Net Sensible Capacity Btu [kW]	34,300 [10.05]	34,300 [10.05]	34,300 [10.05]	34,300 [10.05]
Net Latent Capacity Btu [kW]	12,700 [3.72]	12,700 [3.72]	12,700 [3.72]	12,700 [3.72]
Net System Power kW	4.03	4.03	4.03	4.03
Heating Performance (Gas)³				
Heating Input Btu [kW]	80,000 [23.44]	100,000 [29.3]	135,000 [39.55]	80,000 [23.44]
Heating Output Btu [kW]	64,800 [18.99]	81,000 [23.73]	109,350 [32.04]	64,800 [18.99]
Temperature Rise Range °F [°C]	30-60 [16.7-33.3]	30-60 [16.7-33.3]	50-80 [27.8-44.4]	30-60 [16.7-33.3]
AFUE%	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	5	6	4
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁴	78	78	78	78
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Indoor Coil—Fin Type	Corrugated	Corrugated	Corrugated	Corrugated
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]
Rows / FPI [FPcm]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Re-Heat Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	1/2	1/2	1/2	3/4
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	48	48	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	165 [4678]	165 [4678]	165 [4678]	165 [4678]
Weights				
Net Weight lbs. [kg]	615 [279]	615 [279]	620 [281]	615 [279]
Ship Weight lbs. [kg]	622 [282]	622 [282]	627 [284]	622 [282]

See Page 18 for Notes.

[] Designates Metric Conversions

NOM. SIZES 3-5 TONS [10.6-17.6 kW]

Model RKNL- Series	G048CM10	G048CM13	G048DL08	G048DL10
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	49,000 [14.36]	49,000 [14.36]	49,000 [14.36]	49,000 [14.36]
EER/SEER ²	11/13	11/13	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]
AHRI Net Cooling Capacity Btu [kW]	47,000 [13.77]	47,000 [13.77]	47,000 [13.77]	47,000 [13.77]
Net Sensible Capacity Btu [kW]	34,300 [10.05]	34,300 [10.05]	34,300 [10.05]	34,300 [10.05]
Net Latent Capacity Btu [kW]	12,700 [3.72]	12,700 [3.72]	12,700 [3.72]	12,700 [3.72]
Net System Power kW	4.03	4.03	4.03	4.03
Heating Performance (Gas)³				
Heating Input Btu [kW]	100,000 [29.3]	135,000 [39.55]	80,000 [23.44]	100,000 [29.3]
Heating Output Btu [kW]	81,000 [23.73]	109,350 [32.04]	64,800 [18.99]	81,000 [23.73]
Temperature Rise Range °F [°C]	30-60 [16.7-33.3]	50-80 [27.8-44.4]	30-60 [16.7-33.3]	30-60 [16.7-33.3]
AFUE%	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	5	6	4	5
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁴	78	78	78	78
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Indoor Coil—Fin Type	Corrugated	Corrugated	Corrugated	Corrugated
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]
Rows / FPI [FPcm]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Re-Heat Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	3/4	3/4	1/2	1/2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	48	48
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	165 [4678]	165 [4678]	197 [5585]	197 [5585]
Weights				
Net Weight lbs. [kg]	615 [279]	615 [279]	615 [279]	615 [279]
Ship Weight lbs. [kg]	622 [282]	622 [282]	622 [282]	622 [282]

See Page 18 for Notes.

[] Designates Metric Conversions

NOM. SIZES 3-5 TONS [10.6-17.6 kW]

Model RKNL- Series	G048DL13	G048DM08	G048DM10	G048DM13
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	49,000 [14.36]	49,000 [14.36]	49,000 [14.36]	49,000 [14.36]
EER/SEER ²	11/13	11/13	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]
AHRI Net Cooling Capacity Btu [kW]	47,000 [13.77]	47,000 [13.77]	47,000 [13.77]	47,000 [13.77]
Net Sensible Capacity Btu [kW]	34,300 [10.05]	34,300 [10.05]	34,300 [10.05]	34,300 [10.05]
Net Latent Capacity Btu [kW]	12,700 [3.72]	12,700 [3.72]	12,700 [3.72]	12,700 [3.72]
Net System Power kW	4.03	4.03	4.03	4.03
Heating Performance (Gas)³				
Heating Input Btu [kW]	135,000 [39.55]	80,000 [23.44]	100,000 [29.3]	135,000 [39.55]
Heating Output Btu [kW]	109,350 [32.04]	64,800 [18.99]	81,000 [23.73]	109,350 [32.04]
Temperature Rise Range °F [°C]	50-80 [27.8-44.4]	30-60 [16.7-33.3]	30-60 [16.7-33.3]	50-80 [27.8-44.4]
AFUE%	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	6	4	5	6
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁴	78	78	78	78
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Indoor Coil—Fin Type	Corrugated	Corrugated	Corrugated	Corrugated
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]
Rows / FPI [FPcm]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Re-Heat Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	1/2	3/4	3/4	3/4
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	197 [5585]	197 [5585]	197 [5585]	165 [4678]
Weights				
Net Weight lbs. [kg]	620 [281]	615 [279]	615 [279]	197 [89]
Ship Weight lbs. [kg]	627 [284]	622 [282]	622 [282]	622 [282]

See Page 18 for Notes.

[] Designates Metric Conversions

NOM. SIZES 3-5 TONS [10.6-17.6 kW]

Model RKNL- Series	G060CL10	G060CL13	G060CM10	G060CM13
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	59,000 [17.29]	59,000 [17.29]	59,000 [17.29]	59,000 [17.29]
EER/SEER ²	11/13	11/13	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	2000/1850 [944/873]	2000/1850 [944/873]	2000/1850 [944/873]	2000/1850 [944/873]
AHRI Net Cooling Capacity Btu [kW]	57,000 [16.7]	57,000 [16.7]	57,000 [16.7]	57,000 [16.7]
Net Sensible Capacity Btu [kW]	41,600 [12.19]	41,600 [12.19]	41,600 [12.19]	41,600 [12.19]
Net Latent Capacity Btu [kW]	15,400 [4.51]	15,400 [4.51]	15,400 [4.51]	15,400 [4.51]
Net System Power kW	5.19	5.19	5.19	5.19
Heating Performance (Gas)³				
Heating Input Btu [kW]	100,000 [29.3]	135,000 [39.55]	100,000 [29.3]	135,000 [39.55]
Heating Output Btu [kW]	81,000 [23.73]	109,350 [32.04]	81,000 [23.73]	109,350 [32.04]
Temperature Rise Range °F [°C]	25-55 [13.9-30.6]	40-70 [22.2-38.9]	25-55 [13.9-30.6]	40-70 [22.2-38.9]
AFUE%	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	5	6	5	6
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁴	83	83	83	83
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Indoor Coil—Fin Type	Corrugated	Corrugated	Corrugated	Corrugated
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]
Rows / FPI [FPcm]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Re-Heat Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3930 [1855]	3930 [1855]	3930 [1855]	3930 [1855]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	3/4	3/4	1	1
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	196 [5557]	196 [5557]	196 [5557]	196 [5557]
Weights				
Net Weight lbs. [kg]	625 [284]	632 [287]	625 [284]	625 [284]
Ship Weight lbs. [kg]	632 [287]	639 [290]	632 [287]	632 [287]

See Page 18 for Notes.

[] Designates Metric Conversions

NOM. SIZES 3-5 TONS [10.6-17.6 kW]

Model RKNL- Series	G060DL10	G060DL13	G060DM10	G060DM13
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	59,000 [17.29]	59,000 [17.29]	59,000 [17.29]	59,000 [17.29]
EER/SEER ²	11/13	11/13	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	2000/1850 [944/873]	2000/1850 [944/873]	2000/1850 [944/873]	2000/1850 [944/873]
AHRI Net Cooling Capacity Btu [kW]	57,000 [16.7]	57,000 [16.7]	57,000 [16.7]	57,000 [16.7]
Net Sensible Capacity Btu [kW]	41,600 [12.19]	41,600 [12.19]	41,600 [12.19]	41,600 [12.19]
Net Latent Capacity Btu [kW]	15,400 [4.51]	15,400 [4.51]	15,400 [4.51]	15,400 [4.51]
Net System Power kW	5.19	5.19	5.19	5.19
Heating Performance (Gas)³				
Heating Input Btu [kW]	100,000 [29.3]	135,000 [39.55]	100,000 [29.3]	135,000 [39.55]
Heating Output Btu [kW]	81,000 [23.73]	109,350 [32.04]	81,000 [23.73]	109,350 [32.04]
Temperature Rise Range °F [°C]	25-55 [13.9-30.6]	40-70 [22.2-38.9]	25-55 [13.9-30.6]	40-70 [22.2-38.9]
AFUE%	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	5	6	5	6
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁴	83	83	83	83
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]	16.56 [1.54]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Indoor Coil—Fin Type	Corrugated	Corrugated	Corrugated	Corrugated
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]	5.17 [0.48]
Rows / FPI [FPcm]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]	3 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Re-Heat Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]	4.5 [0.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3930 [1855]	3930 [1855]	3930 [1855]	3930 [1855]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	3/4	3/4	1	1
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	196 [5557]	196 [5557]	196 [5557]	196 [5557]
Weights				
Net Weight lbs. [kg]	625 [284]	632 [287]	625 [284]	625 [284]
Ship Weight lbs. [kg]	632 [287]	639 [290]	632 [287]	632 [287]

See Page 18 for Notes.

[] Designates Metric Conversions

NOTES:

1. Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to $\pm 20\%$ of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.
2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
3. Heating Performance limit settings and rating data were established and approved under laboratory test conditions using American National Standard Institute standards. Ratings shown are for elevations up to 2000 feet. For elevations above 2000 feet, ratings should be reduced at the rate of 4% for each 1000 feet above sea level.
4. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

GROSS SYSTEMS PERFORMANCE DATA—RKNL-G036

		ENTERING INDOOR AIR @ 80°F [26.7°C] dbE ①									
wbE		71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]			
CFM [L/s]		1320 [623]	1200 [566]	1020 [481]	1320 [623]	1200 [566]	1020 [481]	1320 [623]	1200 [566]	1020 [481]	
DR ①		.15	.17	.21	.15	.17	.21	.15	.17	.21	
OUTDOOR DRY BULB TEMPERATURE °F [°C]	75 [23.9]	Total BTUH [kW] Sens BTUH [kW] Power	44.7 [13.1] 24.8 [7.3] 2.2	43.9 [12.9] 22.9 [6.7] 2.2	42.7 [12.5] 20.2 [5.9] 2.2	42.1 [12.3] 29.6 [8.7] 2.2	41.3 [12.1] 27.5 [8.1] 2.2	40.2 [11.8] 24.6 [7.2] 2.2	39.5 [11.6] 33 [9.7] 2.2	38.8 [11.4] 30.8 [9.0] 2.2	37.8 [11.1] 27.7 [8.1] 2.2
	80 [26.7]	Total BTUH [kW] Sens BTUH [kW] Power	43.6 [12.8] 24.8 [7.3] 2.3	42.8 [12.5] 22.9 [6.7] 2.2	41.6 [12.2] 20.2 [5.9] 2.2	40.9 [12.0] 29.6 [8.7] 2.3	40.2 [11.8] 27.6 [8.1] 2.2	39.1 [11.5] 24.6 [7.2] 2.2	38.3 [11.2] 33 [9.7] 2.3	37.7 [11.0] 30.9 [9.1] 2.3	36.6 [10.7] 27.7 [8.1] 2.2
	85 [29.4]	Total BTUH [kW] Sens BTUH [kW] Power	42.3 [12.4] 24.6 [7.2] 2.3	41.6 [12.2] 22.8 [6.7] 2.3	40.4 [11.8] 20.1 [5.9] 2.3	39.7 [11.6] 29.5 [8.6] 2.4	39 [11.4] 27.5 [8.1] 2.3	37.9 [11.1] 24.6 [7.2] 2.3	37.1 [10.9] 32.8 [9.6] 2.4	36.4 [10.7] 30.6 [9.0] 2.3	35.4 [10.4] 27.5 [8.1] 2.3
	90 [32.2]	Total BTUH [kW] Sens BTUH [kW] Power	41 [12.0] 24.2 [7.1] 2.5	40.3 [11.8] 22.4 [6.6] 2.4	39.2 [11.5] 19.8 [5.8] 2.4	38.4 [11.3] 29.1 [8.5] 2.5	37.7 [11.0] 27.1 [7.9] 2.4	36.6 [10.7] 24.2 [7.1] 2.4	35.8 [10.5] 32.3 [9.5] 2.5	35.2 [10.3] 30.3 [8.9] 2.4	34.2 [10.0] 27.2 [8.0] 2.4
	95 [35]	Total BTUH [kW] Sens BTUH [kW] Power	39.7 [11.6] 23.7 [6.9] 2.6	39 [11.4] 21.9 [6.4] 2.6	37.9 [11.1] 19.3 [5.7] 2.5	37 [10.8] 28.5 [8.4] 2.6	36.3 [10.6] 26.5 [7.8] 2.6	35.3 [10.3] 23.7 [6.9] 2.5	34.4 [10.1] 31.8 [9.3] 2.6	33.8 [9.9] 29.8 [8.7] 2.6	32.9 [9.6] 26.9 [7.9] 2.5
	100 [37.8]	Total BTUH [kW] Sens BTUH [kW] Power	38.2 [11.2] 22.8 [6.7] 2.7	37.6 [11.0] 21.2 [6.2] 2.7	36.5 [10.7] 18.7 [5.5] 2.7	35.6 [10.4] 27.7 [8.1] 2.7	34.9 [10.2] 25.8 [7.6] 2.7	34 [10.0] 23.2 [6.8] 2.7	33 [9.7] 31.1 [9.1] 2.7	32.4 [9.5] 29.1 [8.5] 2.7	31.5 [9.2] 26.2 [7.7] 2.7
	105 [40.6]	Total BTUH [kW] Sens BTUH [kW] Power	36.8 [10.8] 22 [6.4] 2.9	36.1 [10.6] 20.3 [5.9] 2.9	35.1 [10.3] 17.9 [5.2] 2.8	34.1 [10.0] 26.8 [7.9] 2.9	33.5 [9.8] 25 [7.3] 2.9	32.6 [9.6] 22.4 [6.6] 2.8	31.5 [9.2] 30 [8.8] 2.9	31 [9.1] 28.2 [8.3] 2.9	30.1 [8.8] 25.4 [7.4] 2.9
	110 [43.3]	Total BTUH [kW] Sens BTUH [kW] Power	35.2 [10.3] 20.8 [6.1] 3.1	34.6 [10.1] 19.3 [5.7] 3.1	33.6 [9.8] 17 [5.0] 3.0	32.6 [9.6] 25.7 [7.5] 3.1	32 [9.4] 24 [7.0] 3.1	31.1 [9.1] 21.5 [6.3] 3.0	30 [8.8] 29 [8.5] 3.1	29.5 [8.6] 27.2 [8.0] 3.1	28.7 [8.4] 24.6 [7.2] 3.0
	115 [46.1]	Total BTUH [kW] Sens BTUH [kW] Power	33.6 [9.8] 19.5 [5.7] 3.3	33 [9.7] 18 [5.3] 3.3	32.1 [9.4] 15.9 [4.7] 3.3	31 [9.1] 24.4 [7.1] 3.3	30.4 [8.9] 22.7 [6.7] 3.3	29.6 [8.7] 20.4 [6.0] 3.3	28.4 [8.3] 27.7 [8.1] 3.3	27.9 [8.2] 26 [7.6] 3.3	27.1 [7.9] 23.4 [6.9] 3.3

GROSS SYSTEMS PERFORMANCE DATA—RKNL-G048

		ENTERING INDOOR AIR @ 80°F [26.7°C] dbE ①									
wbE		71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]			
CFM [L/s]		1760 [831]	1600 [755]	1360 [642]	1760 [831]	1600 [755]	1360 [642]	1760 [831]	1600 [755]	1360 [642]	
DR ①		.13	.15	.18	.13	.15	.18	.13	.15	.18	
OUTDOOR DRY BULB TEMPERATURE °F [°C]	75 [23.9]	Total BTUH [kW] Sens BTUH [kW] Power	59.2 [17.3] 33.8 [9.9] 2.8	58.1 [17.0] 31.2 [9.1] 2.8	56.5 [16.6] 27.5 [8.1] 2.8	56.7 [16.6] 40.5 [11.9] 2.8	55.7 [16.3] 37.7 [11.0] 2.8	54.1 [15.9] 33.6 [9.8] 2.7	54.2 [15.9] 45.4 [13.3] 2.8	53.3 [15.6] 42.5 [12.5] 2.7	51.8 [15.2] 38.1 [11.2] 2.7
	80 [26.7]	Total BTUH [kW] Sens BTUH [kW] Power	57.5 [16.8] 33.7 [9.9] 3	56.4 [16.5] 31.1 [9.1] 3	54.9 [16.1] 27.5 [8.1] 2.9	54.9 [16.1] 40.3 [11.8] 3	54 [15.8] 37.6 [11.0] 2.9	52.5 [15.4] 33.6 [9.8] 2.9	52.5 [15.4] 45.2 [13.2] 2.9	51.6 [15.1] 42.3 [12.4] 2.9	50.2 [14.7] 38 [11.1] 2.9
	85 [29.4]	Total BTUH [kW] Sens BTUH [kW] Power	55.7 [16.3] 33.3 [9.8] 3.2	54.7 [16.0] 30.8 [9.0] 3.1	53.2 [15.6] 27.2 [8.0] 3.1	53.2 [15.6] 40 [11.7] 3.1	52.3 [15.3] 37.3 [10.9] 3.1	50.8 [14.9] 33.3 [9.8] 3.1	50.8 [14.9] 44.9 [13.2] 3.1	49.9 [14.6] 42 [12.3] 3.1	48.5 [14.2] 37.8 [11.1] 3
	90 [32.2]	Total BTUH [kW] Sens BTUH [kW] Power	54 [15.8] 32.8 [9.6] 3.4	53 [15.5] 30.3 [8.9] 3.3	51.6 [15.1] 26.9 [7.9] 3.3	51.5 [15.1] 39.5 [11.6] 3.3	50.5 [14.8] 36.7 [10.8] 3.3	49.2 [14.4] 32.9 [9.6] 3.3	49 [14.4] 44.4 [13.0] 3.3	48.1 [14.1] 41.5 [12.2] 3.3	46.8 [13.7] 37.4 [11.0] 3.2
	95 [35]	Total BTUH [kW] Sens BTUH [kW] Power	52.2 [15.3] 32 [9.4] 3.6	51.3 [15.0] 29.7 [8.7] 3.5	49.9 [14.6] 26.3 [7.7] 3.5	49.7 [14.6] 38.7 [11.3] 3.5	48.8 [14.3] 36.1 [10.6] 3.5	47.5 [13.9] 32.4 [9.5] 3.5	47.3 [13.9] 43.6 [12.8] 3.5	46.4 [13.6] 40.8 [12.0] 3.5	45.1 [13.2] 36.7 [10.8] 3.4
	100 [37.8]	Total BTUH [kW] Sens BTUH [kW] Power	50.4 [14.8] 31.1 [9.1] 3.8	49.5 [14.5] 28.8 [8.4] 3.7	48.2 [14.1] 25.6 [7.5] 3.7	47.9 [14.0] 37.8 [11.1] 3.7	47.1 [13.8] 35.3 [10.3] 3.7	45.8 [13.4] 31.6 [9.3] 3.7	45.5 [13.3] 42.7 [12.5] 3.7	44.7 [13.1] 40 [11.7] 3.7	43.4 [12.7] 36 [10.5] 3.6
	105 [40.6]	Total BTUH [kW] Sens BTUH [kW] Power	48.6 [14.2] 29.9 [8.8] 4	47.8 [14.0] 27.8 [8.1] 4	46.5 [13.6] 24.6 [7.2] 3.9	46.1 [13.5] 36.6 [10.7] 4	45.3 [13.3] 34.2 [10.0] 3.9	44.1 [12.9] 30.7 [9.0] 3.9	43.7 [12.8] 41.6 [12.2] 3.9	42.9 [12.6] 38.9 [11.4] 3.9	41.7 [12.2] 35.1 [10.3] 3.9
	110 [43.3]	Total BTUH [kW] Sens BTUH [kW] Power	46.8 [13.7] 28.6 [8.4] 4.2	46 [13.5] 26.5 [7.8] 4.2	44.8 [13.1] 23.5 [6.9] 4.1	44.3 [13.0] 35.3 [10.3] 4.2	43.5 [12.7] 32.9 [9.6] 4.2	42.4 [12.4] 29.6 [8.7] 4.1	41.9 [12.3] 40.2 [11.8] 4.2	41.2 [12.1] 37.7 [11.0] 4.1	40 [11.7] 33.9 [9.9] 4.1
	115 [46.1]	Total BTUH [kW] Sens BTUH [kW] Power	45 [13.2] 27 [7.9] 4.5	44.2 [13.0] 25 [7.3] 4.4	43 [12.6] 22.1 [6.5] 4.4	42.5 [12.5] 33.8 [9.9] 4.5	41.8 [12.2] 31.6 [9.3] 4.4	40.6 [11.9] 28.3 [8.3] 4.4	40.1 [11.7] 38.7 [11.3] 4.4	39.4 [11.5] 36.3 [10.6] 4.4	38.3 [11.2] 32.7 [9.6] 4.3

DR —Depression ratio
dbE—Entering air dry bulb
wbE—Entering air wet bulb

Total —Total capacity x 1000 BTUH
Sens —Sensible capacity x 1000 BTUH
Power —KW input

NOTES: ① When the entering air dry bulb is other than 80°F [27°C], adjust the sensible capacity from the table by adding [1.10 x CFM x (1 - DR) x (dbE - 80)].

[] Designates Metric Conversions

GROSS SYSTEMS PERFORMANCE DATA—RKNL-G060

ENTERING INDOOR AIR @ 80°F [26.7°C] dbE ①											
wbE		71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]			
CFM [L/s]		2040 [963]	1850 [873]	1570 [741]	2040 [963]	1850 [873]	1570 [741]	2040 [963]	1850 [873]	1570 [741]	
DR ①		.09	.11	.15	.09	.11	.15	.09	.11	.15	
OUTDOOR DRY BULB TEMPERATURE °F [°C]	75 [23.9]	Total BTUH [kW] Sens BTUH [kW] Power	70.9 [20.8] 42.1 [12.3] 3.7	69.6 [20.4] 38.9 [11.4] 3.7	67.7 [19.8] 34.4 [10.1] 3.7	67.4 [19.7] 50.3 [14.7] 3.7	66.2 [19.4] 46.8 [13.7] 3.7	64.3 [18.8] 41.7 [12.2] 3.6	63.8 [18.7] 56.1 [16.4] 3.7	62.6 [18.3] 52.3 [15.3] 3.7	60.9 [17.8] 47 [13.8] 3.6
	80 [26.7]	Total BTUH [kW] Sens BTUH [kW] Power	69.2 [20.3] 41.6 [12.2] 3.9	67.9 [19.9] 38.4 [11.3] 3.9	66.1 [19.4] 34 [10.0] 3.9	65.7 [19.2] 49.7 [14.6] 3.9	64.5 [18.9] 46.2 [13.5] 3.9	62.7 [18.4] 41.3 [12.1] 3.8	62.1 [18.2] 55.4 [16.2] 3.9	60.9 [17.8] 51.7 [15.1] 3.9	59.3 [17.4] 46.6 [13.7] 3.8
	85 [29.4]	Total BTUH [kW] Sens BTUH [kW] Power	67.4 [19.7] 40.8 [12.0] 4.2	66.2 [19.4] 37.7 [11.0] 4.1	64.4 [18.9] 33.4 [9.8] 4.1	63.9 [18.7] 48.9 [14.3] 4.1	62.7 [18.4] 45.5 [13.3] 4.1	61 [17.9] 40.7 [11.9] 4.0	60.3 [17.7] 54.7 [16.0] 4.1	59.2 [17.3] 51.1 [15.0] 4.1	57.6 [16.9] 46 [13.5] 4.0
	90 [32.2]	Total BTUH [kW] Sens BTUH [kW] Power	65.6 [19.2] 39.8 [11.7] 4.4	64.4 [18.9] 36.8 [10.8] 4.4	62.7 [18.4] 32.6 [9.6] 4.3	62.1 [18.2] 48 [14.1] 4.4	60.9 [17.8] 44.6 [13.1] 4.3	59.3 [17.4] 40 [11.7] 4.3	58.5 [17.1] 53.8 [15.8] 4.3	57.4 [16.8] 50.2 [14.7] 4.3	55.8 [16.3] 45.2 [13.2] 4.2
	95 [35]	Total BTUH [kW] Sens BTUH [kW] Power	63.8 [18.7] 38.9 [11.4] 4.6	62.6 [18.3] 35.9 [10.5] 4.6	60.9 [17.8] 31.8 [9.3] 4.5	60.2 [17.6] 46.9 [13.7] 4.6	59.1 [17.3] 43.7 [12.8] 4.6	57.5 [16.8] 39.1 [11.5] 4.5	56.6 [16.6] 52.7 [15.4] 4.6	55.6 [16.3] 49.3 [14.4] 4.5	54.1 [15.9] 44.4 [13.0] 4.5
	100 [37.8]	Total BTUH [kW] Sens BTUH [kW] Power	61.9 [18.1] 37.7 [11.0] 4.9	60.8 [17.8] 34.9 [10.2] 4.8	59.1 [17.3] 30.9 [9.1] 4.8	58.3 [17.1] 45.8 [13.4] 4.9	57.3 [16.8] 42.7 [12.5] 4.8	55.7 [16.3] 38.2 [11.2] 4.8	54.7 [16.0] 51.6 [15.1] 4.8	53.7 [15.7] 48.2 [14.1] 4.8	52.3 [15.3] 43.5 [12.7] 4.7
	105 [40.6]	Total BTUH [kW] Sens BTUH [kW] Power	59.9 [17.6] 36.4 [10.7] 5.2	58.8 [17.2] 33.6 [9.8] 5.1	57.2 [16.8] 29.7 [8.7] 5.0	56.4 [16.5] 44.5 [13.0] 5.1	55.4 [16.2] 41.5 [12.2] 5.1	53.8 [15.8] 37.1 [10.9] 5	52.8 [15.5] 50.3 [14.7] 5.1	51.8 [15.2] 47 [13.8] 5.1	50.4 [14.8] 42.4 [12.4] 5
	110 [43.3]	Total BTUH [kW] Sens BTUH [kW] Power	58 [17.0] 35.1 [10.3] 5.4	56.9 [16.7] 32.4 [9.5] 5.4	55.3 [16.2] 28.6 [8.4] 5.3	54.4 [15.9] 43.1 [12.6] 5.4	53.4 [15.6] 40.1 [11.7] 5.4	52 [15.2] 36 [10.5] 5.3	50.8 [14.9] 48.8 [14.3] 5.4	49.9 [14.6] 45.7 [13.4] 5.3	48.5 [14.2] 41.2 [12.1] 5.3
	115 [46.1]	Total BTUH [kW] Sens BTUH [kW] Power	56 [16.4] 33.5 [9.8] 5.7	54.9 [16.1] 30.9 [9.1] 5.7	53.4 [15.6] 27.3 [8.0] 5.6	52.4 [15.4] 41.6 [12.2] 5.7	51.4 [15.1] 38.7 [11.3] 5.7	50 [14.6] 34.7 [10.2] 5.6	48.8 [14.3] 47.4 [13.9] 5.7	47.9 [14.0] 44.3 [13.0] 5.6	46.6 [13.7] 40 [11.7] 5.6

DR —Depression ratio
dbE —Entering air dry bulb
wbE —Entering air wet bulb

Total —Total capacity x 1000 BTUH
Sens —Sensible capacity x 1000 BTUH
Power —KW input

NOTES: ① When the entering air dry bulb is other than 80°F [27°C], adjust the sensible capacity from the table by adding [1.10 x CFM x (1 - DR) x (dbE - 80)].

[] Designates Metric Conversions

GROSS SYSTEMS PERFORMANCE DATA (HIGH REHEAT MODE)—RKNL-G036

		ENTERING INDOOR AIR @ 75°F [23.9°C] dbE ①									
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		1320 [623]	1200 [566]	1020 [481]	1320 [623]	1200 [566]	1020 [481]	1320 [623]	1200 [566]	1020 [481]	
OUTDOOR DRY BULB TEMPERATURE	60 [15.6]	Total BTUH [kW]	13.1 [3.8]	12.9 [3.8]	12.6 [3.7]	12.7 [3.7]	12.5 [3.7]	12.1 [3.6]	11.5 [3.4]	11.2 [3.3]	10.9 [3.2]
		Sens BTUH [kW]	-0.8 [-0.2]	-0.8 [-0.2]	-0.7 [-0.2]	1.3 [0.4]	1.3 [0.4]	1.2 [0.3]	3.4 [1]	3.3 [1]	3 [0.9]
		Power	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	70 [21.1]	Total BTUH [kW]	12.3 [3.6]	12.1 [3.5]	11.8 [3.5]	11.9 [3.5]	11.7 [3.4]	11.4 [3.3]	10.6 [3.1]	10.5 [3.1]	10.2 [3]
		Sens BTUH [kW]	-1.6 [-0.5]	-1.6 [-0.5]	-1.4 [-0.4]	0.5 [0.2]	0.5 [0.1]	0.5 [0.1]	2.6 [0.8]	2.5 [0.7]	2.3 [0.7]
		Power	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1
	80 [26.7]	Total BTUH [kW]	12.2 [3.6]	12 [3.5]	11.7 [3.4]	11.8 [3.5]	11.6 [3.4]	11.3 [3.3]	10.5 [3.1]	10.4 [3]	10.1 [3]
Sens BTUH [kW]		-1.9 [-0.5]	-1.8 [-0.5]	-1.6 [-0.5]	0.3 [0.1]	0.3 [0.1]	0.3 [0.1]	2.4 [0.7]	2.3 [0.7]	2.1 [0.6]	
Power		2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
90 [32.2]	Total BTUH [kW]	12.9 [3.8]	12.6 [3.7]	12.3 [3.6]	12.4 [3.6]	12.2 [3.6]	11.9 [3.5]	11.2 [3.3]	11 [3.2]	10.7 [3.1]	
	Sens BTUH [kW]	-1.5 [-0.4]	-1.4 [-0.4]	-1.3 [-0.4]	0.6 [0.2]	0.6 [0.2]	0.6 [0.2]	2.8 [0.8]	2.6 [0.8]	2.4 [0.7]	
	Power	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	
100 [37.8]	Total BTUH [kW]	14.2 [4.2]	14 [4.1]	13.6 [4]	13.8 [4]	13.5 [4]	13.2 [3.9]	12.5 [3.7]	12.3 [3.6]	12 [3.5]	
	Sens BTUH [kW]	-0.6 [-0.2]	-0.6 [-0.2]	-0.5 [-0.2]	1.5 [0.5]	1.5 [0.4]	1.4 [0.4]	3.7 [1.1]	3.5 [1]	3.2 [1]	
	Power	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	
110 [43.3]	Total BTUH [kW]	16.3 [4.8]	16 [4.7]	15.6 [4.6]	15.9 [4.6]	15.6 [4.6]	15.1 [4.4]	14.6 [4.3]	14.3 [4.2]	13.9 [4.1]	
	Sens BTUH [kW]	0.9 [0.3]	0.8 [0.2]	0.8 [0.2]	3 [0.9]	2.9 [0.8]	2.7 [0.8]	5.1 [1.5]	4.9 [1.4]	4.6 [1.3]	
	Power	1.7	1.7	1.7	1.7	1.7	1.6	1.7	1.7	1.7	
120 [48.9]	Total BTUH [kW]	19.1 [5.6]	18.7 [5.5]	18.2 [5.3]	18.6 [5.5]	18.3 [5.4]	17.8 [5.2]	17.4 [5.1]	17.1 [5]	16.6 [4.9]	
	Sens BTUH [kW]	2.9 [0.8]	2.8 [0.8]	2.6 [0.8]	5 [1.5]	4.8 [1.4]	4.5 [1.3]	7.2 [2.1]	6.8 [2]	6.4 [1.9]	
	Power	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	

GROSS SYSTEMS PERFORMANCE DATA (HIGH REHEAT MODE)—RKNL-G048

		ENTERING INDOOR AIR @ 75°F [23.9°C] dbE ①									
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		1760 [831]	1600 [755]	1360 [642]	1760 [831]	1600 [755]	1360 [642]	1760 [831]	1600 [755]	1360 [642]	
OUTDOOR DRY BULB TEMPERATURE	60 [15.6]	Total BTUH [kW]	27.2 [8]	26.7 [7.8]	26 [7.6]	26.3 [7.7]	25.9 [7.6]	25.2 [7.4]	26.4 [7.7]	25.9 [7.6]	25.2 [7.4]
		Sens BTUH [kW]	4.3 [1.2]	4.1 [1.2]	3.8 [1.1]	7.2 [2.1]	6.9 [2]	6.4 [1.9]	10.7 [3.1]	10.3 [3]	9.5 [2.8]
		Power	2.8	2.8	2.7	2.8	2.8	2.7	2.8	2.8	2.7
	70 [21.1]	Total BTUH [kW]	26.4 [7.7]	26 [7.6]	25.2 [7.4]	25.5 [7.5]	25.1 [7.4]	24.4 [7.2]	25.6 [7.5]	25.1 [7.4]	24.4 [7.2]
		Sens BTUH [kW]	3.4 [1]	3.3 [1]	3 [0.9]	6.4 [1.9]	6.1 [1.8]	5.7 [1.7]	9.9 [2.9]	9.5 [2.8]	8.8 [2.6]
		Power	2.8	2.8	2.7	2.8	2.8	2.7	2.8	2.8	2.7
	80 [26.7]	Total BTUH [kW]	25.3 [7.4]	24.8 [7.3]	24.1 [7.1]	24.4 [7.1]	24 [7]	23.3 [6.8]	24.4 [7.2]	24 [7]	23.3 [6.8]
Sens BTUH [kW]		2.4 [0.7]	2.3 [0.7]	2.1 [0.6]	5.4 [1.6]	5.1 [1.5]	4.8 [1.4]	8.9 [2.6]	8.5 [2.5]	7.9 [2.3]	
Power		2.9	2.8	2.8	2.9	2.9	2.8	2.9	2.8	2.8	
90 [32.2]	Total BTUH [kW]	23.7 [7]	23.3 [6.8]	22.7 [6.6]	22.9 [6.7]	22.5 [6.6]	21.8 [6.4]	22.9 [6.7]	22.5 [6.6]	21.9 [6.4]	
	Sens BTUH [kW]	1.3 [0.4]	1.2 [0.4]	1.1 [0.3]	4.2 [1.2]	4 [1.2]	3.7 [1.1]	7.7 [2.3]	7.4 [2.2]	6.9 [2]	
	Power	3.0	3.0	2.9	3.0	3.0	2.9	3.0	3.0	2.9	
100 [37.8]	Total BTUH [kW]	21.9 [6.4]	21.5 [6.3]	20.9 [6.1]	21 [6.1]	20.6 [6]	20 [5.9]	21 [6.2]	20.6 [6.1]	20.1 [5.9]	
	Sens BTUH [kW]	0 [0]	0 [0]	0 [0]	2.9 [0.9]	2.8 [0.8]	2.6 [0.8]	6.4 [1.9]	6.2 [1.8]	5.7 [1.7]	
	Power	3.2	3.2	3.1	3.2	3.2	3.1	3.2	3.1	3.1	
110 [43.3]	Total BTUH [kW]	19.6 [5.7]	19.3 [5.6]	18.7 [5.5]	18.7 [5.5]	18.4 [5.4]	17.9 [5.2]	18.8 [5.5]	18.4 [5.4]	17.9 [5.3]	
	Sens BTUH [kW]	-1.5 [-0.4]	-1.4 [-0.4]	-1.3 [-0.4]	1.4 [0.4]	1.4 [0.4]	1.3 [0.4]	5 [1.5]	4.8 [1.4]	4.4 [1.3]	
	Power	3.4	3.4	3.3	3.4	3.4	3.4	3.4	3.4	3.3	
120 [48.9]	Total BTUH [kW]	17 [5]	16.7 [4.9]	16.2 [4.8]	16.1 [4.7]	15.8 [4.6]	15.4 [4.5]	16.1 [4.7]	15.9 [4.6]	15.4 [4.5]	
	Sens BTUH [kW]	-3.1 [-0.9]	-3 [-0.9]	-2.8 [-0.8]	-0.2 [-0.1]	-0.2 [0]	-0.2 [0]	3.4 [1]	3.2 [0.9]	3 [0.9]	
	Power	3.7	3.7	3.6	3.7	3.7	3.6	3.7	3.7	3.6	

DR —Depression ratio
dbE —Entering air dry bulb
wbE—Entering air wet bulb

Total —Total capacity x 1000 BTUH
Sens —Sensible capacity x 1000 BTUH
Power —KW input

NOTES: ① When the entering air dry bulb is other than 80°F [27°C], adjust the sensible capacity from the table by adding [1.10 x CFM x (1 - DR) x (dbE - 80)].

[] Designates Metric Conversions

GROSS SYSTEMS PERFORMANCE DATA (HIGH REHEAT MODE)—RKNL-G060

ENTERING INDOOR AIR @ 75°F [23.9°C] dbE ①											
wbE			65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]		
CFM [L/s]			2040 [963]	1850 [873]	1570 [741]	2040 [963]	1850 [873]	1570 [741]	2040 [963]	1850 [873]	1570 [741]
O U T D O O R D R Y B U L B T E M P E R A T U R E ° F [° C]	60 [15.6]	Total BTUH [kW]	26.1 [7.6]	25.6 [7.5]	24.9 [7.3]	25.2 [7.4]	24.7 [7.2]	24 [7]	24.8 [7.3]	24.3 [7.1]	23.7 [6.9]
		Sens BTUH [kW]	3.3 [1]	3.1 [0.9]	2.9 [0.8]	5.2 [1.5]	4.9 [1.4]	4.6 [1.3]	8.8 [2.6]	8.4 [2.5]	7.8 [2.3]
		Power	3.6	3.6	3.5	3.6	3.6	3.5	3.6	3.5	3.5
	70 [21.1]	Total BTUH [kW]	25.5 [7.5]	25 [7.3]	24.4 [7.1]	24.6 [7.2]	24.1 [7.1]	23.5 [6.9]	24.2 [7.1]	23.7 [7]	23.1 [6.8]
		Sens BTUH [kW]	2.4 [0.7]	2.3 [0.7]	2.1 [0.6]	4.3 [1.3]	4.1 [1.2]	3.8 [1.1]	7.9 [2.3]	7.6 [2.2]	7 [2.1]
		Power	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4
	80 [26.7]	Total BTUH [kW]	23.5 [6.9]	23.1 [6.8]	22.4 [6.6]	22.6 [6.6]	22.1 [6.5]	21.5 [6.3]	22.2 [6.5]	21.8 [6.4]	21.2 [6.2]
		Sens BTUH [kW]	1.2 [0.3]	1.1 [0.3]	1 [0.3]	3.1 [0.9]	2.9 [0.9]	2.7 [0.8]	6.7 [2]	6.4 [1.9]	5.9 [1.7]
		Power	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5
	90 [32.2]	Total BTUH [kW]	20.1 [5.9]	19.7 [5.8]	19.2 [5.6]	19.1 [5.6]	18.8 [5.5]	18.3 [5.4]	18.8 [5.5]	18.4 [5.4]	17.9 [5.2]
		Sens BTUH [kW]	-0.5 [-0.1]	-0.5 [-0.1]	-0.4 [-0.1]	1.4 [0.4]	1.4 [0.4]	1.3 [0.4]	5 [1.5]	4.8 [1.4]	4.5 [1.3]
		Power	3.9	3.9	3.8	3.9	3.8	3.8	3.9	3.8	3.8
100 [37.8]	Total BTUH [kW]	15.2 [4.5]	15 [4.4]	14.6 [4.3]	14.3 [4.2]	14 [4.1]	13.7 [4]	13.9 [4.1]	13.7 [4]	13.3 [3.9]	
	Sens BTUH [kW]	-2.5 [-0.7]	-2.4 [-0.7]	-2.2 [-0.7]	-0.6 [-0.2]	-0.6 [-0.2]	-0.6 [-0.2]	3 [0.9]	2.9 [0.8]	2.7 [0.8]	
	Power	4.3	4.2	4.2	4.3	4.2	4.2	4.3	4.2	4.2	
110 [43.3]	Total BTUH [kW]	9 [2.6]	8.8 [2.6]	8.6 [2.5]	8.1 [2.4]	7.9 [2.3]	7.7 [2.3]	7.7 [2.2]	7.5 [2.2]	7.3 [2.1]	
	Sens BTUH [kW]	-5 [-1.5]	-4.7 [-1.4]	-4.4 [-1.3]	-3.1 [-0.9]	-2.9 [-0.9]	-2.7 [-0.8]	0.6 [0.2]	0.5 [0.2]	0.5 [0.1]	
	Power	4.8	4.8	4.7	4.8	4.8	4.7	4.8	4.8	4.7	
120 [48.9]	Total BTUH [kW]	1.3 [0.4]	1.3 [0.4]	1.3 [0.4]	0.4 [0.1]	0.4 [0.1]	0.4 [0.1]	0 [0]	0 [0]	0 [0]	
	Sens BTUH [kW]	-7.8 [-2.3]	-7.5 [-2.2]	-6.9 [-2]	-5.9 [-1.7]	-5.6 [-1.7]	-5.2 [-1.5]	-2.3 [-0.7]	-2.2 [-0.6]	-2 [-0.6]	
	Power	5.5	5.5	5.4	5.5	5.4	5.4	5.5	5.4	5.4	

DR —Depression ratio
dbE —Entering air dry bulb
wbE—Entering air wet bulb

Total —Total capacity x 1000 BTUH
Sens —Sensible capacity x 1000 BTUH
Power —KW input

NOTES: ① When the entering air dry bulb is other than 80°F [27°C], adjust the sensible capacity from the table by adding [1.10 x CFM x (1 - DR) x (dbE - 80)].

[] Designates Metric Conversions

AIRFLOW PERFORMANCE—3 TON [10.55 KW] GAS HEAT MODELS BELT DRIVE

Air Flow CFM [L/s]	Capacity 3 Ton [10.55 kW]—13 SEER		External Static Pressure—Inches of Water [kPa]																													
	Voltage 208/230-460—3 Phase		0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W		
900 [425]	—	—	650	230	715	260	780	290	845	340	905	400	960	455	1010	470	1055	490	1095	525	1140	555	1170	580	1215	625	1240	645				
1000 [472]	—	—	615	225	670	255	740	280	800	320	860	375	925	425	980	470	1025	485	1075	515	1105	540	1155	575	1180	605	1225	650	1260	715		
1100 [519]	—	—	630	255	700	275	760	310	820	345	885	390	940	435	995	485	1035	505	1085	540	1120	575	1170	615	1190	640	1235	690	1270	730		
1200 [566]	605	250	655	270	720	305	775	340	835	370	900	415	955	475	1005	495	1045	540	1095	580	1130	605	1180	655	1210	690	1245	730	1290	780		
1300 [614]	620	275	675	300	750	340	805	375	855	400	920	455	970	505	1025	530	1060	575	1115	610	1155	630	1195	680	1220	730	1265	780	1300	825		
1400 [661]	640	305	710	340	775	375	825	395	880	440	940	480	990	520	1035	560	1080	590	1125	650	1170	705	1230	750	1280	810	1270	840	1320	880		
1500 [708]	680	340	745	370	800	405	845	425	910	490	955	535	1005	565	1050	615	1090	660	1135	700	1185	760	1225	820	1240	850	1290	905	1330	940		

Drive Package	L						M							
	0	1	2	3	4	5	6	7	8	9	10	11		
Motor H.P. [W]	1/2 [373]						1/2 [373]							
Blower Sheave	6.9" Pitch Diameter						6.4" Pitch Diameter							
Motor Sheave	2.4"-3.4" Pitch Diameter						3.4"-4.4" Pitch Diameter							
Turns Open	0	1	2	3	4	5	6	0	1	2	3	4		
RPM	920	855	800	750	705	665	605	1230	1180	1130	1090	1045	1000	940

NOTE: Factory sheave settings are shown in bold print.

COMPONENT AIR RESISTANCE

Component	Standard Indoor Airflow—CFM [L/s]										Resistance—Inches Water [kPa]		
	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [850]	2000 [944]	2200 [1038]	2400 [1133]	2600 [1227]	2800 [1321]			
Wet Coil	.035	.040	.060	.070	.085	.100	.110	.120	.125	.130			
Downflow	.055	.060	.066	.072	.080	.086	.093	.100	.107	.115			
R.S.I. Economizer R.A. Damper	.05	.06	.07	.08	.09	.10	.11	.12	.13	.15			

N Drive (Field Supplied)
Blower Sheave—5.7 Pitch Diameter
Motor Sheave—3.4-4.4 Pitch Diameter
RPM Range—1030-1330
Motor—1/2 H.P. [373 W]—1750 RPM

NOTES:

- Performance shown with dry coil & standard 1" [25.4 mm] filters
- Standard CFM @ .075 lbs./cu. ft.
- Motor efficiency = 80% on 208/230, 460, 575 V, 3-Phase
Motor efficiency = 50% on 208/230 V, 1-Phase
- BHP = $\frac{\text{Watts} \times \text{Motor Eff.}}{746}$
- Add component resistance to duct static to determine total E.S.P.

[] Designates Metric Conversions

AIRFLOW PERFORMANCE—4 TON [14.07 kW] BELT DRIVE

Air Flow CFM [L/s]	Capacity 4 Ton [14.07 kW]—13 SEER Voltage 208/230-460—3 Phase																			
	External Static Pressure—Inches of Water [kPa]																			
	0.1 [.02]	0.2 [.05]	0.3 [.07]	0.4 [.10]	0.5 [.12]	0.6 [.15]	0.7 [.17]	0.8 [.20]	0.9 [.22]	1.0 [.25]	1.1 [.27]	1.2 [.30]	1.3 [.32]	1.4 [.35]	1.5 [.37]					
1200 [566]	—	—	—	780	835	885	935	985	1035	1085	1135	1185	1235	1285	1335	1385	1435	1485	1535	1585
1300 [614]	—	—	—	805	855	905	955	1005	1055	1105	1155	1205	1255	1305	1355	1405	1455	1505	1555	1605
1400 [661]	—	—	—	825	875	925	975	1025	1075	1125	1175	1225	1275	1325	1375	1425	1475	1525	1575	1625
1500 [708]	—	—	—	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1600 [755]	—	—	—	875	925	975	1025	1075	1125	1175	1225	1275	1325	1375	1425	1475	1525	1575	1625	1675
1700 [802]	—	—	—	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700
1800 [850]	775	820	875	930	980	1030	1080	1130	1180	1230	1280	1330	1380	1430	1480	1530	1580	1630	1680	1730
1900 [897]	800	855	910	965	1020	1075	1130	1185	1240	1295	1350	1405	1460	1515	1570	1625	1680	1735	1790	1845
2000 [944]	830	885	940	995	1050	1105	1160	1215	1270	1325	1380	1435	1490	1545	1600	1655	1710	1765	1820	1875

NOTE: L-Drive left of bold line, M-Drive right of bold line.

Drive Package	L						M							
	Motor H.P. [W]	1/2 [373]						3/4 [559]						
Blower Sheave	6.4" Pitch Diameter						5.7" Pitch Diameter							
Motor Sheave	2.8"-3.8" Pitch Diameter						3.4"-4.4" Pitch Diameter							
Turns Open	0	1	2	3	4	5	6	0	1	2	3	4	5	6
RPM	1060	1000	955	910	865	825	770	1385	1330	1280	1225	1175	1120	1060

NOTE: Factory sheave settings are shown in bold print.

[] Designates Metric Conversions

AIRFLOW PERFORMANCE—5 TON [17.6 kW] THREE PHASE BELT DRIVE

Air Flow CFM [L/s]	Capacity 5 Ton [17.6 kW]—13 SEER		Voltage 208/230-460—3 Phase		External Static Pressure—Inches of Water [kPa]																										
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]		
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	
1400 [661]	—	—	—	—	780	370	815	385	875	425	930	460	970	490	1030	540	1065	570	1105	595	1150	615	1195	645	1235	660	1300	705	1340	745	
1500 [708]	—	—	—	—	795	405	840	415	895	440	945	500	995	540	1045	595	1080	615	1135	650	1165	675	1215	700	1255	735	1320	775	1355	805	
1600 [755]	—	—	—	780	390	805	425	870	470	915	510	965	560	1015	600	1060	640	1105	680	1145	705	1180	730	1225	750	1275	790	1340	840	1365	880
1700 [802]	—	—	—	795	450	840	490	895	530	940	570	990	605	1035	640	1075	680	1120	725	1160	755	1200	790	1245	815	1300	855	1355	905	1375	940
1800 [850]	780	455	815	470	870	540	915	560	965	615	1010	660	1055	710	1100	760	1140	785	1175	810	1225	850	1260	880	1320	930	1365	985	1390	1020	
1900 [897]	800	485	850	530	895	590	945	640	995	675	1035	720	1070	775	1120	810	1160	850	1200	890	1245	915	1290	960	1335	1000	1375	1050	1405	1100	
2000 [944]	830	550	880	605	930	655	970	700	1015	730	1055	790	1105	830	1145	875	1180	910	1225	950	1260	980	1320	1035	1350	1075	1385	1120	—	—	
2100 [991]	860	615	915	655	955	705	1005	760	1040	820	1090	870	1130	910	1170	950	1210	995	1250	1020	1290	1060	1335	1100	1370	1150	1400	1200	—	—	
2200 [1038]	895	680	945	735	995	780	1030	830	1060	880	1120	940	1155	980	1195	1020	1240	1055	1275	1100	1320	1140	1360	1180	1385	1225	—	—	—	—	
2300 [1085]	940	755	975	795	1015	830	1065	910	1100	965	1150	105	1180	1050	1225	1095	1265	1125	1310	1175	1350	1230	1375	1260	1405	1320	—	—	—	—	
2400 [1133]	970	825	1015	880	1040	925	1095	1005	1145	1055	1175	1085	1225	1140	1260	1175	1300	1210	1340	1255	1370	1315	1400	1375	—	—	—	—	—	—	
2500 [1179]	1015	910	1040	935	1095	1040	1145	1100	1170	1140	1200	1175	1260	1215	1305	1270	1360	1350	1400	1395	—	—	—	—	—	—	—	—	—	—	

NOTE: L-Drive left of bold line, M-Drive right of bold line.

Drive Package	L		M	
Motor H.P. [W]	3/4 [559]		1 [746]	
Blower Sheave	6.4" Pitch Diameter		6.4" Pitch Diameter	
Motor Sheave	2.8"-3.8" Pitch Diameter—Adj.		3.4"-4.4" Pitch Diameter—Adj.	
Turns Open	0	1	2	3
RPM	1095	1040	995	940
	1405	1360	1305	1250
	1405	1360	1195	1145
	1405	1360	1195	1095

NOTE: Factory sheave settings are shown in bold print.

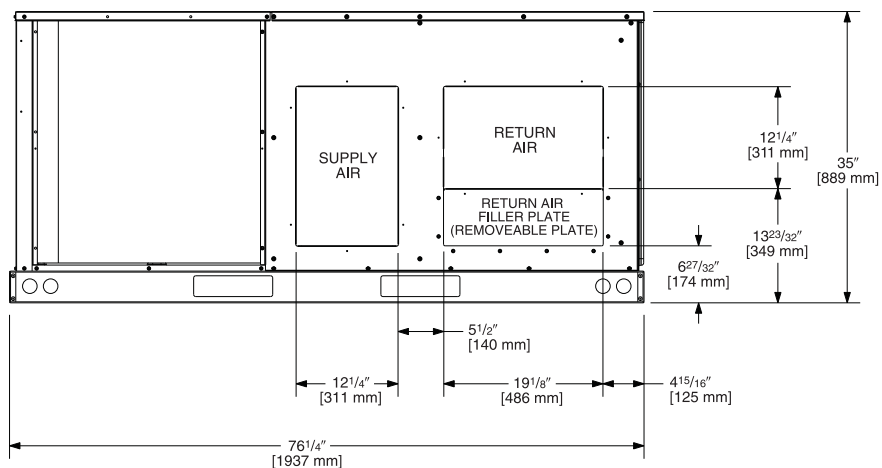
[] Designates Metric Conversions

ELECTRICAL DATA – RKNL-G SERIES							
		G036CL	G036CM	G036DL	G036DM	G048CL	G048CM
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	187-253	187-253
	Volts	208/230	208/230	460	460	208/230	208/230
	Minimum Circuit Ampacity	18/18	18/18	10	10	22/22	23/23
	Minimum Overcurrent Protection Device Size	20/20	20/20	15	15	25/25	30/30
	Maximum Overcurrent Protection Device Size	25/25	25/25	15	15	35/35	35/35
Compressor Motor	No.	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230
	Phase	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	3	3	3	3	4	4
	Amps (RLA), Comp. 1	10.4/10.4	10.4/10.4	5.8	5.8	13.7/13.7	13.7/13.7
	Amps (LRA), Comp. 1	88/88	88/88	38	38	83.1/83.1	83.1/83.1
	HP, Compressor 2	—	—	—	—	—	—
	Amps (RLA), Comp. 2	—	—	—	—	—	—
Amps (LRA), Comp. 2	—	—	—	—	—	—	
Compressor Motor	No.	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230
	Phase	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1.5/1.5	1.5/1.5	1	1	1.5/1.5	1.5/1.5
	Amps (LRA, each)	3/3	3/3	1.9	1.9	3/3	3/3
Evaporator Fan	No.	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230
	Phase	3	3	3	3	3	3
	HP	1/2	1/2	1/2	1/2	1/2	3/4
	Amps (FLA, each)	2.8/2.8	2.8/2.8	1.4	1.4	2.8/2.8	3.4/3.4
	Amps (LRA, each)	11.3/11.3	11.3/11.3	6.2	6.2	11.3/11.3	16.8/16.8

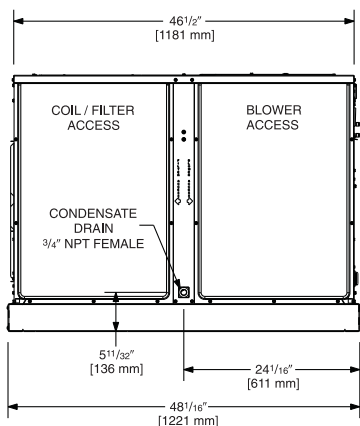
ELECTRICAL DATA – RKNL-G SERIES							
		G048DL	G048DM	G060CL	G060CM	G060DL	G060DM
Unit Information	Unit Operating Voltage Range	414-506	414-506	187-253	187-253	414-506	414-506
	Volts	460	460	208/230	208/230	460	460
	Minimum Circuit Ampacity	11	11	26/26	26/26	13	13
	Minimum Overcurrent Protection Device Size	15	15	30/30	30/30	15	15
	Maximum Overcurrent Protection Device Size	15	15	40/40	40/40	20	20
Compressor Motor	No.	1	1	1	1	1	1
	Volts	460	460	208/230	208/230	460	460
	Phase	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	4	4	5	5	5	5
	Amps (RLA), Comp. 1	6.2	6.2	15.6/15.6	15.6/15.6	7.8	7.8
	Amps (LRA), Comp. 1	41	41	110/110	110/110	52	52
	HP, Compressor 2	—	—	—	—	—	—
	Amps (RLA), Comp. 2	—	—	—	—	—	—
Amps (LRA), Comp. 2	—	—	—	—	—	—	
Compressor Motor	No.	1	1	1	1	1	1
	Volts	460	460	208/230	208/230	460	460
	Phase	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1	1	2.2/2.2	2.2/2.2	1	1
	Amps (LRA, each)	1.9	1.9	4.9/4.9	4.9/4.9	1.9	1.9
Evaporator Fan	No.	1	1	1	1	1	1
	Volts	460	460	208/230	208/230	460	460
	Phase	3	3	3	3	3	3
	HP	1/2	3/4	3/4	1	3/4	1
	Amps (FLA, each)	1.4	1.6	3.4/3.4	3.8/3.8	1.6	1.9
	Amps (LRA, each)	6.2	8.4	16.8/16.8	24/24	8.4	12

UNIT DIMENSIONS PACKAGE GAS ELECTRIC UNITS

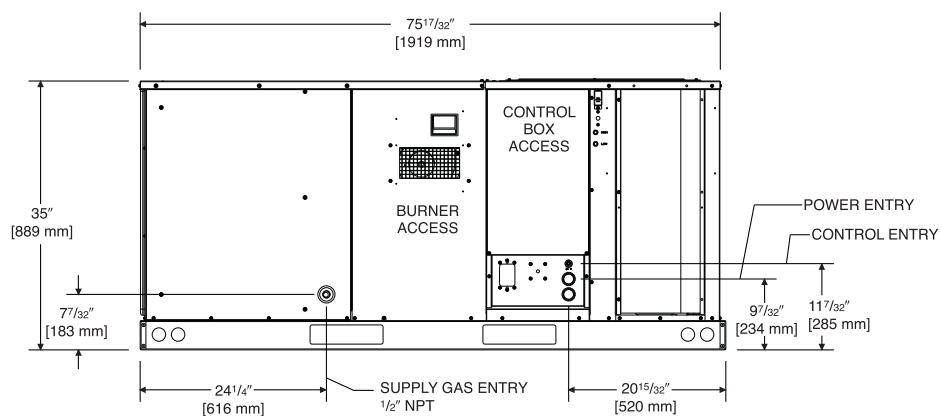
BACK VIEW



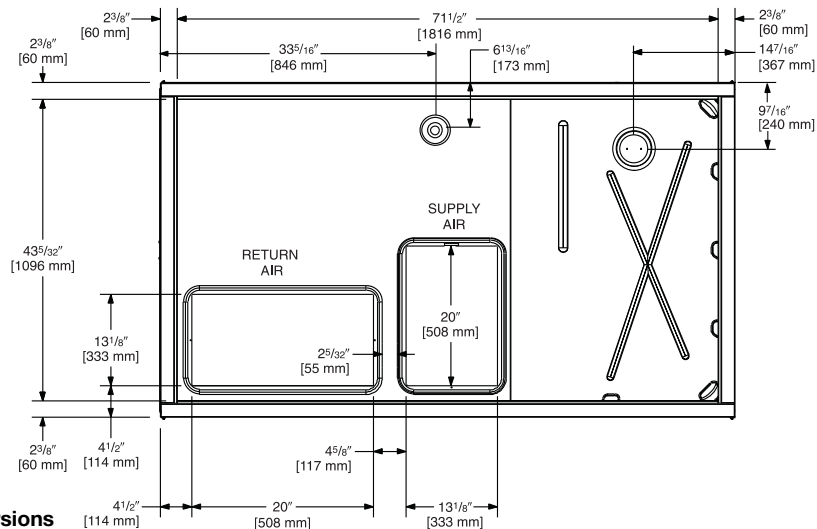
SIDE VIEW



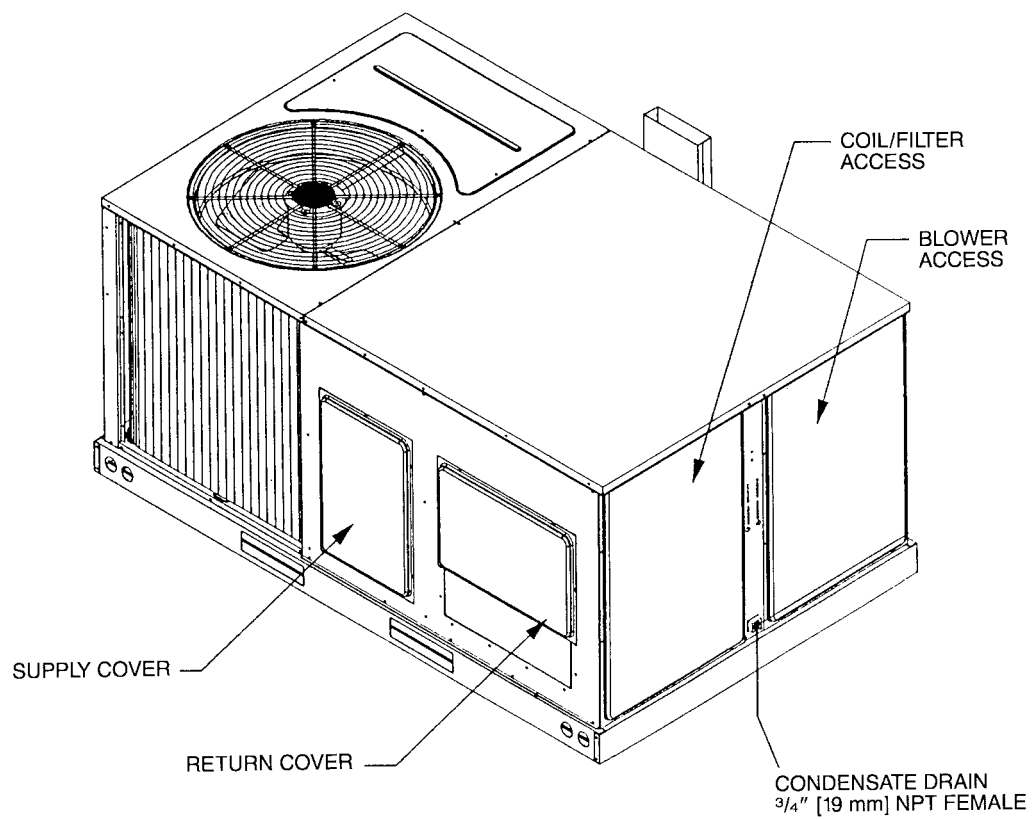
FRONT VIEW



BOTTOM VIEW



[] Designates Metric Conversions



[] Designates Metric Conversions

WEIGHTS

Accessory	3-5 Ton [10.6-17.6 kW]	
	Shipping	Operating
	lbs [kg]	lbs [kg]
Economizer with Single Enthalpy	70 [32]	60 [27]
Power Exhaust	70 [32]	67 [30]
Fresh Air Damper (Manual)	11 [5]	9 [4]
Fresh Air Damper (Motorized)	13 [6]	11 [5]
Roof Curb 14"	92 [42]	88 [40]
Roof Curb 24"	108 [49]	104 [47]
Concentric Diffuser 18" Flush	37 [17]	26 [12]
Concentric Diffuser 20" Flush	54 [24]	42 [19]
Side Discharge Concentric Diffuser RXRN-FA60	35 [16]	20 [9]
Side Discharge Concentric Diffuser RXRN-FA65	55 [25]	40 [18]

CENTER OF GRAVITY (C.G.)

Capacity Tons [kW]	A in. [mm]	B in. [mm]
3-5 [10.6-17.6]	38 ¹ / ₄ [972]	25 ³ / ₄ [654]

Capacity Tons [kW]	Corner Weights by Percentage			
	A	B	C	D
3-5 [10.6-17.6]	22%	27%	23%	28%

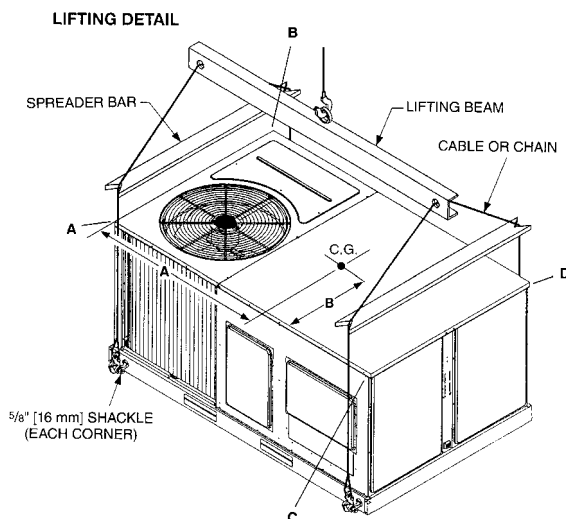
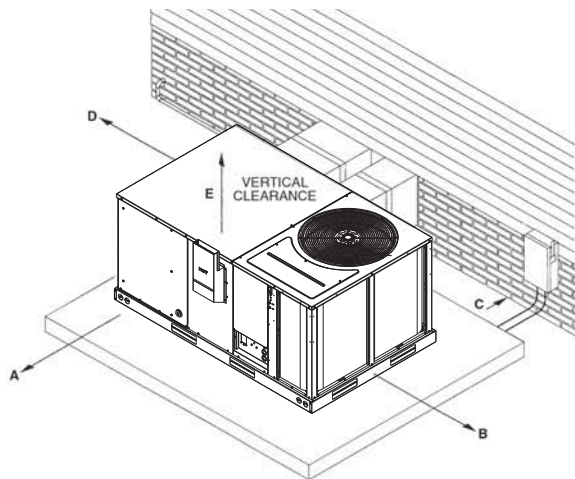
CLEARANCES (3 to 5 Ton [10.6 to 17.6 kW] Models)

The following minimum clearances are recommended for proper unit performance and serviceability.

Recommended Clearance in. [mm]	Location
48 [1219]	A - Front
18 [457]	B - Condenser Coil
12 [305]	C - Duct Side
36 [914]	D - Evaporator End
60 [1524]	E - Above

*Without Economizer. 57" [1448 mm] With Economizer

NOTE: Supply duct may be installed with "0" inch clearance to combustible materials, provided 1" [25.4 mm] minimum Fiberglass insulation is applied either inside or on the outside of the duct.



[] Designates Metric Conversions

ACCESSORY EQUIPMENT

Accessory Description	Model Application 3 to 5 Ton [10.6 to 17.6 kW]	Accessory Model No. 3 to 5 Ton [10.6 to 17.6 kW]	Factory Installed 3 to 5 Ton [10.6 to 17.6 kW]
Thermostats	RKNL-G	See Thermostat Specification Sheet (T22-001)	No
Roofcurb 14"	RKNL-G	RXKG-CAD14	No
Roofcurb 24"	RKNL-G	RXKG-CAD24	No
Roofcurb Adapters	RKNL-G	RXRX-BBCDB21 RXRX-BBCDB22 RXRX-BBCDB23	No
Economizer with Single Enthalpy ②	RKNL-G	AXRD-TKCM3	Yes
Economizer with Smoke Detector ②	RKNL-G	AXRD-UKCM3	Yes
Non-powered Convenience Outlet	RKNL-G	RXRX-AN02	Yes
Service disconnect	RKNL-G	RXRX-AP02	Yes
Dual Enthalpy Kit	RKNL-G	RXRX-AV03	No
CO ₂ Sensor Only	RKNL-G	RXRX-AR02	No
Power Exhaust	RKNL-G	AXRX-BGF04C, D, Y	No
Fresh Air Damper Manual	RKNL-G	AXRF-FBA1	No
Fresh Air Damper Motorized	RKNL-G	AXRF-FBB1	No
Rectangular to Round 18" Duct Adapters for Concentric Diffuser	RKNL-G	RXMC-CB03	No
Rectangular to Round 20" Duct Adapters for Concentric Diffuser	RKNL-G	RXMC-CB04	No
Concentric Diffuser 18" Step	RKNL-G	RXRN-FA60, RXRN-FA65	No
Concentric Diffuser 18" Flush	RKNL-G	RXRN-FA70, RXRN-FA75	No
Rectangular to Round 16" Side	RKNL-G	RXMC-BB01	No
Louver Kit (3 Sides)	All RKNL-G Models	AXRX-AAD01B	Yes
Low Ambient Control to 0°F [-18°C]	RKNL-G	RXRZ-A04	Yes
LP Conversion Kits for use with White Rodgers Gas Valve ①	RKNL-G	RXGJ-EP84W	No
LP Conversion Kits for use with Honeywell Gas Valve ①	RKNL-G	RXGJ-EP85H	No
Canadian High Altitude Kit (for Natural Gas Only) ①	RKNL-G	RXRX-AH01	No
Comfort Alert (1 Per Compressor)	RKNL-G	RXRX-AZ01	Yes
BACnet Communication Card	RKNL-G	RXRX-AY01	No
LonWorks Communication Card	RKNL-G	RXRX-AY02	No
Room Humidity Sensor	RKNL-G	RHC-ZNS4	No
Room Temperature & Relative Humidity Sensor	RKNL-G	RHC-ZNS5	No

*Voltage C = 208/230 VAC-3PH-60HZ D = 460 VAC-3PH-60HZ

NOTES: ① If a particular unit is to be converted to operate on **LP (propane)** for elevations above 2000 ft. in Canada, the existing Natural Gas to LP Conversion Kits for the subject models already contain the necessary orifices and instructions to de-rate the input for 2000-4500 ft. Canadian applications.

② Economizer is designed for downflow or horizontal applications.

[] Designates Metric Conversions

THERMOSTATS



200-Series *
Programmable



300-Series *
Deluxe
Programmable



500-Series *
Communicating/
Programmable

400-Series *
Special Applications/
Programmable

Brand	Descriptor (3 Characters)	Series (3 Characters)	System (2 Characters)	Type (2 Characters)
UHC	- TST	213	UN	MS
UHC=Ruud	TST=Thermostat	200=Programmable 300=Deluxe Programmable 400=Special Applications/ Programmable 500=Communicating/ Programmable	GE=Gas/Electric UN=Universal (AC/HP/GE) MD=Modulating Furnace DF=Dual Fuel CM=Communicating	SS=Single-Stage MS=Multi-Stage

* Photos are representative. Actual models may vary.

For detailed thermostat match-up information,
see specification sheet form number T22-001.

Roofcurb Adapters

Old Models

MEDIUM CABINET (3 TON [11 kW])

(-)SNC, (-)SND, (-)SNE
(-)RGE, (-)RGF, (-)RGG
(-)PNC, (-)PND

LARGE CABINET

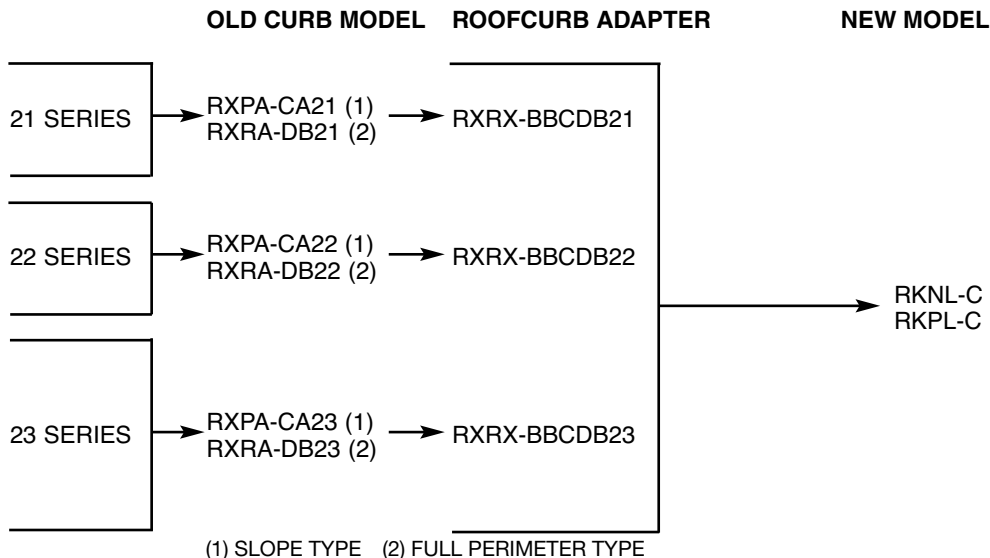
(3-3½ TON [11-12 kW])

(-)RGE, (-)RGF, (-)RGG,
(-)RGH (3 TON [11 kW])

EXTRA LARGE CABINET

(3½-5 TON [12-18 kW])

(-)SNC, (-)SND, (-)SNE
(-)RGE, (-)RGF,
(-)RGG (4-5 TON [14-18 kW])
(-)PNC, (-)PND, (-)RGH
(3½, 4 TON [12-14 kW])



[] Designates Metric Conversions

FLUSH MOUNT ROOM TEMPERATURE SENSORS FOR NETWORKED DDC APPLICATIONS (Replaces Thermostat)



**ROOM TEMPERATURE SENSOR
with TIMED OVERRIDE BUTTON**

ZNS-101

10k Ω room temperature sensor transmits room temperature to DDC system. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time.



**ROOM TEMPERATURE SENSOR
with TIMED OVERRIDE BUTTON and STATUS INDICATOR**

ZNS-102

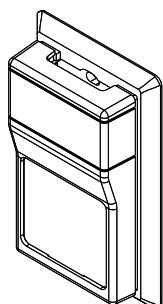
10k Ω room temperature sensor transmits room temperature to DDC system. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time. Status Indicator Light transmits ALARM flash code to occupied space.



**ROOM TEMPERATURE SENSOR
with SETPOINT ADJUSTMENT and TIMED OVERRIDE BUTTON**

ZNS-103

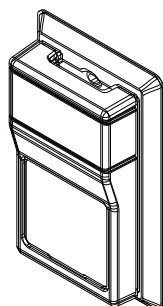
10k Ω room temperature sensor with setpoint adjustment transmits room temperature to DDC system along with desired occupied room temperature setpoint. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time.



ROOM HUMIDITY SENSOR

RHC-ZNS4

Transmits room relative humidity to DDC System.



ROOM TEMPERATURE AND RELATIVE HUMIDITY SENSOR **RHC-ZNS5**

Transmits room temperature and relative humidity to DDC System.

COMMUNICATION CARDS

Field Installed



BACnet® COMMUNICATION CARD RXXR-AY01

The field installed BACnet® Communication Card allows the RTU-C unit controller to communicate with a third party building management system that supports the BACnet Application Specific Controller device profile. The BACnet® Communication Module plugs onto the unit RTU-C controller and allows communication between the RTU-C and the BACnet MSTP network.



LonWorks® COMMUNICATION CARD RXXR-AY02

The field installed LonWorks® Communication Card allows the RTU-C unit controller to communicate with a third party building management system that supports the LonMark Space Comfort Controller (SCC) functional profile or LonMark Discharge Air Controller (DAC) functional profile. The LonMark Communication Module plugs onto the RTU-C controller and allows communication between the RTU-C and a LonWorks Network.

ROOFCURBS (Full Perimeter)

- Ruud's new roofcurb design can be utilized on 3 through 5 ton [10.6-17.6 kW] models.
- Two available heights (14" [356 mm] and 24" [610 mm]) for ALL models.
- Quick assembly corners for simple and fast assembly
- Opening provided in bottom pan to match the "Thru the Curb" electrical connection opening provided on the unit base pan.
- 2" [51 mm] x 4" [102 mm] Nailer provided.
- Insulating panels provided.
- Sealing gasket (28" [711 mm]) provided with Roofcurb.
- Packaged for easy field assembly.

Roofcurb Model	Height of Curb
RXKG-CAD14	14" [356 mm]
RXKG-CAD24	24" [610 mm]

[] Designates Metric Conversions

TYPICAL INSTALLATION

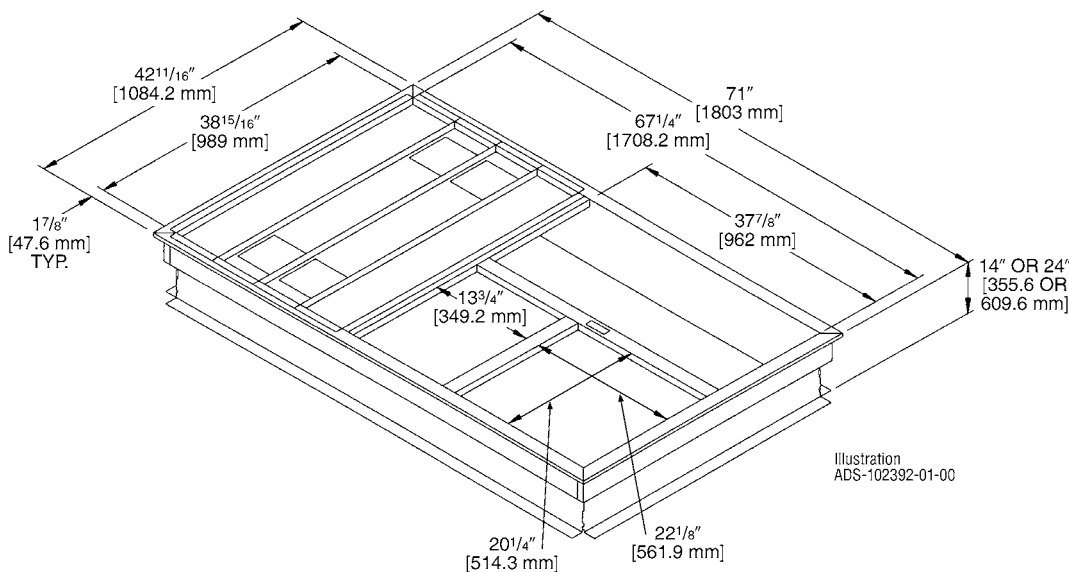
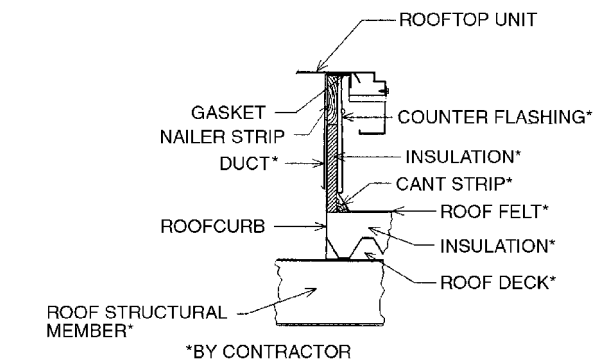
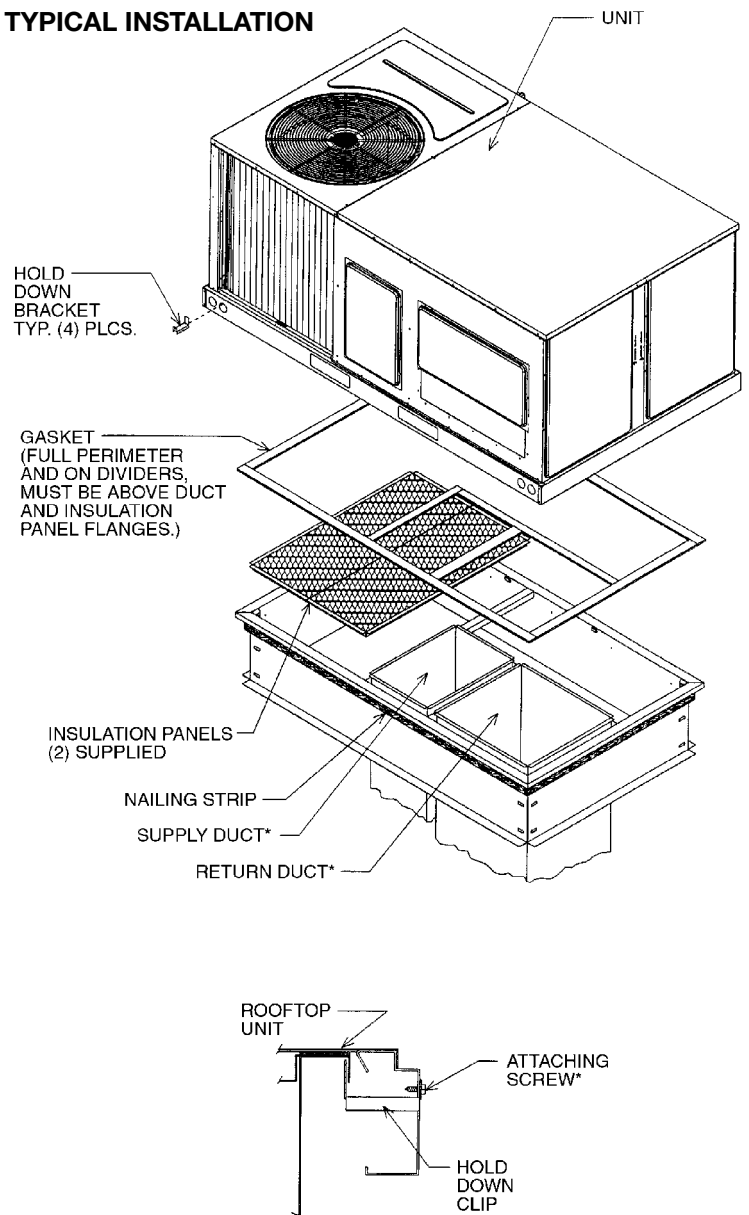


Illustration
ADS-102392-01-00

ECONOMIZERS

AXRD-TKCM3—3-5 Ton [10.6-17.6 kW] Models

AXRD-UKCM3—3-5 Ton [10.6-17.6 kW] Models
3-5 Ton [10.6-17.6 kW] Models

RXX-AR02—3-5 Ton [10.6-17.6 kW] Models

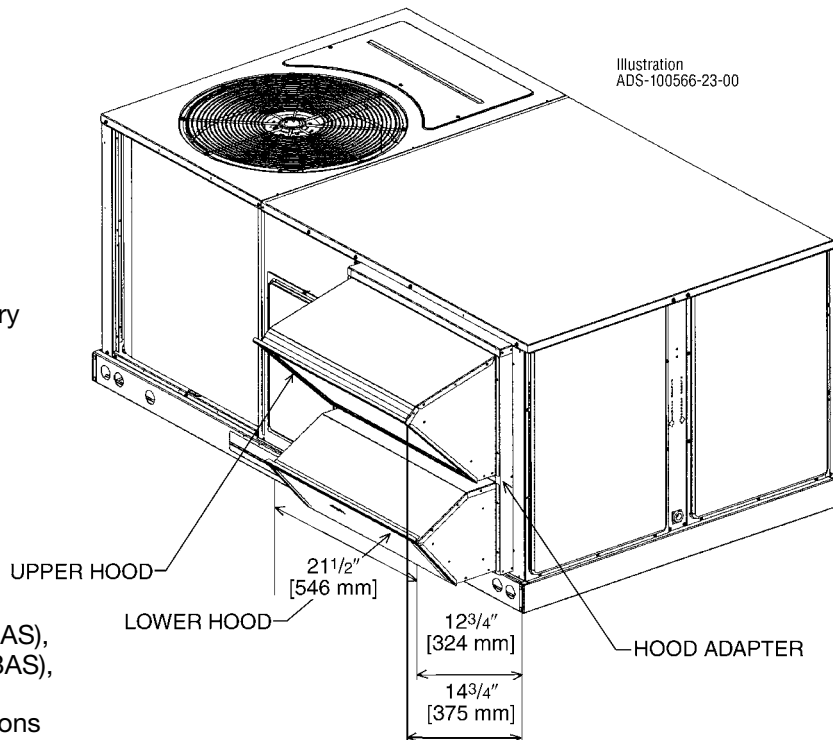
RXX-AR02—3-5 Ton [10.6-17.6 kW] Models

- Features **Honeywell** Controls
- Available factory installed or field accessory
- Gear Driven Direct Drive Actuator
- Fully Modulating (0-100%)
- Low Leakage Dampers
- Horizontal or Downflow Applications
- Slip-In Design for Easy Installations
- Plug-In Polarized 12-pin Electrical Connections
- Pre-configuring—No Field Adjustments Necessary
- Standard Barometric Relief Damper Provided
- Single Enthalpy with Dual Enthalpy upgrade kit
- CO₂ Input Sensor Available (field installed)
- Economizer ships in complete for downflow or horizontal duct applications
- Field assembled hood ships with Economizer
- Optional Remote minimum position (Honeywell #S963B1128) is available from ProStock.
- Field installed power exhaust available
- If connected to a Building Automation System (BAS), all economizer functions can be viewed on the (BAS), or 16 x 2 LCD screen
- If connected to thermostat, all economizer functions can be viewed on 16 x 2 LCD screen

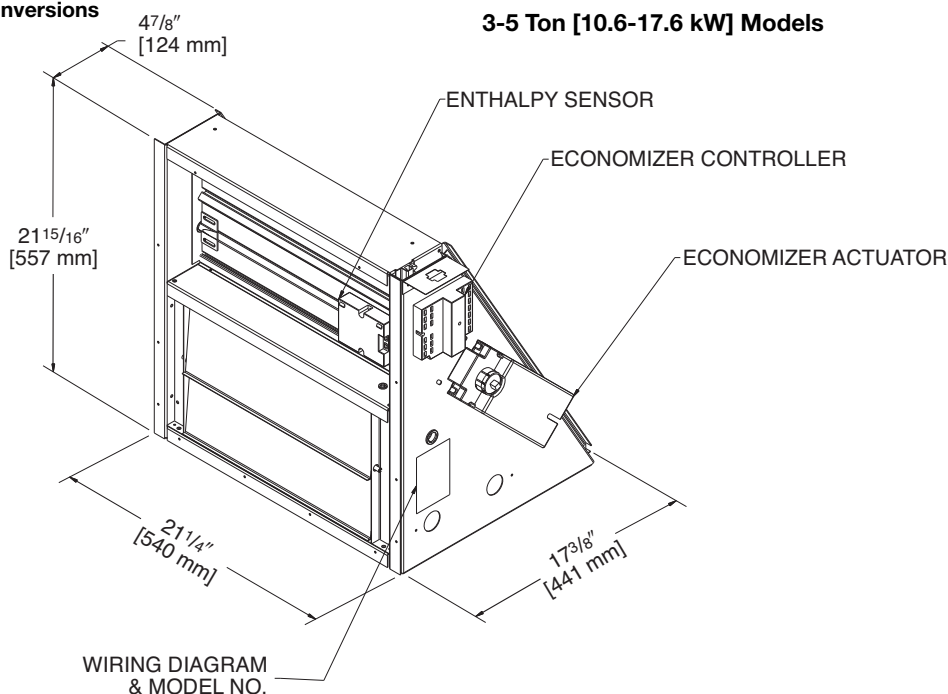
Single Enthalpy

Single Enthalpy and smoke detector

Dual Enthalpy Kit
Optional CO₂ Sensor



[] Designates Metric Conversions



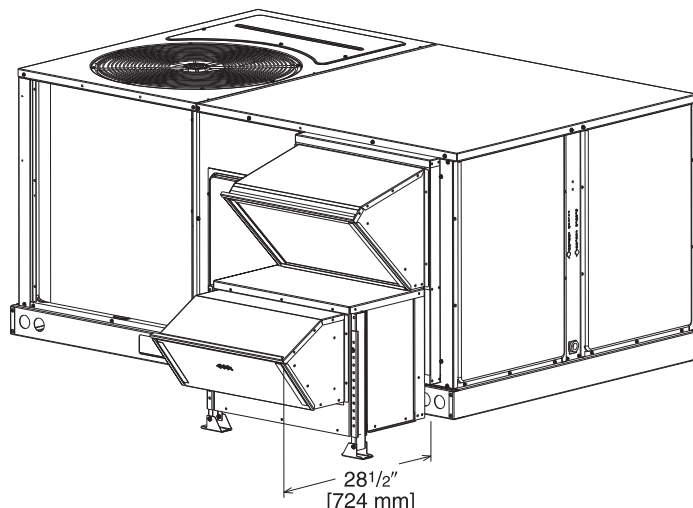
INTEGRAL POWER EXHAUST FOR ECONOMIZER (FIELD INSTALLED ONLY)

AXRX-BGF04C—RKNL-G 3-5 Ton [10.6-17.6 kW] Models
208/230 V, 1PH and 3PH, 60 Hz

AXRX-BGF04D—RKNL-G 3-5 Ton [10.6-17.6 kW] Models
460 V, 3PH, 60 Hz

RXXRX-BGF04Y—RKNL-G 3-5 Ton [10.6-17.6 kW] Models
575 V, 3PH, 60 Hz

- For **Honeywell** economizer.
- Downflow or horizontal applications.
- Requires separate 208-230 volt – 1 PH power supply with disconnect or requires separate 460V - 1 PH power supply with disconnect.
- Adjustable switch on economizer, factory preset to energize power exhaust at 95% outside air position.
- Polarized plug connects power exhaust relay to economizer.



POWER EXHAUST KIT FOR RXRD-MECM(-) ECONOMIZERS

Model No.	No. of Fans	Volts	Phase	Watts (ea.)	High Speed		FLA (ea.)	LRA (ea.)
					CFM ①	RPM		
AXRX-BGF04C	1	208-230	1	1000	2500	1725	4.4	23.7
AXRX-BGF04D	1	460	1	800	2370	1620	1.8	4.1

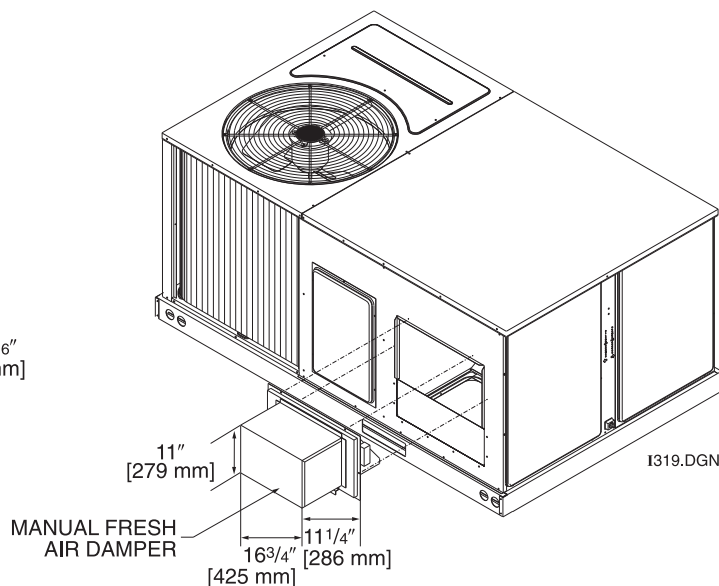
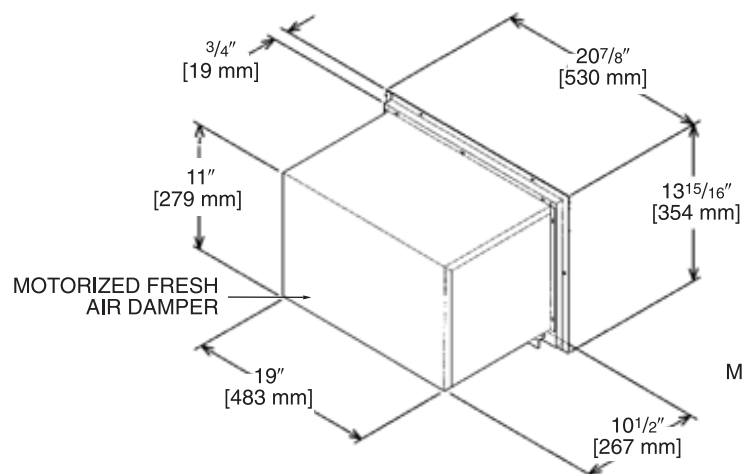
① CFM is at 0" W.C. external static pressure.

FRESH AIR DAMPER

RKNL-G 3-5 Ton [10.6-17.6 kW] Models

AXRF-FBA1 (Manual)

AXRF-FBB1 (Motorized)



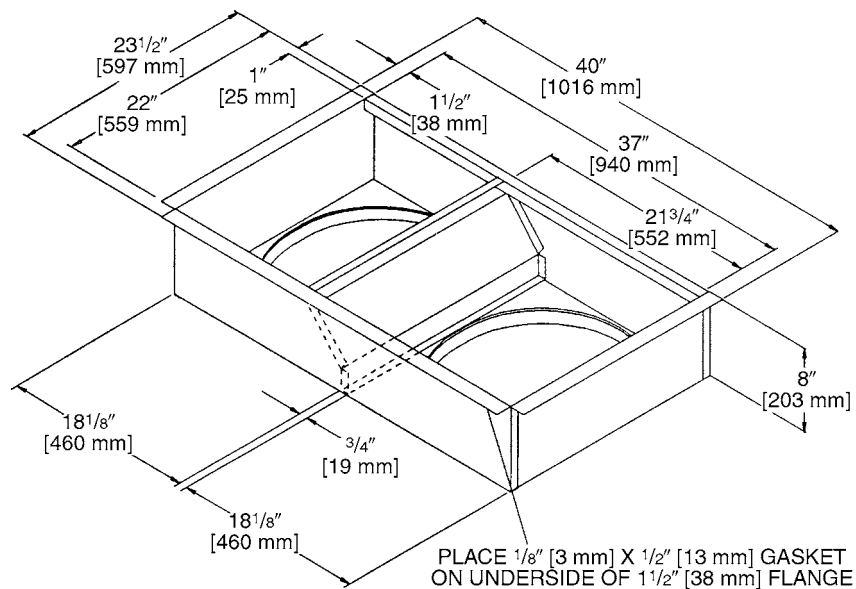
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DUCT ADAPTERS (RKNL-G 3-5 Ton [10.6-17.6 kW] Models) Rectangular to Round Transitions (Downflow)

RXMC-CB03 sizes available
18" [457 mm] fit all units.
Drops into and secures to
RXKG- Series Roofcurbs.

**For use with
Concentric Diffusers.**

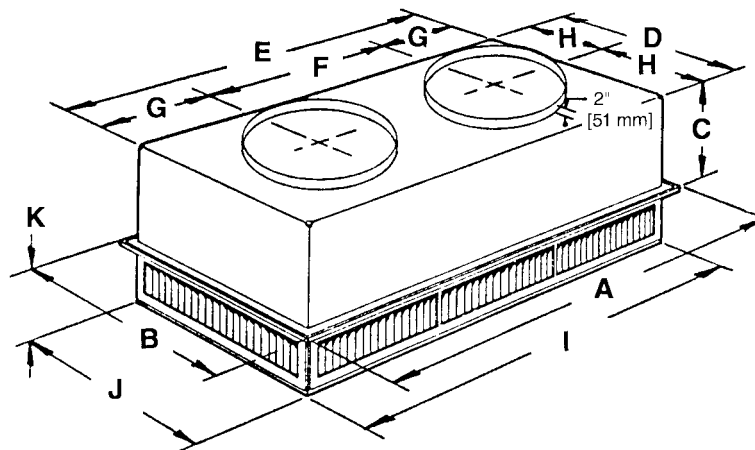
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SIDE DISCHARGE CONCENTRIC DIFFUSER

RXRN-FA60 (3 to 6 Ton [10.6 to 21.1 kW] Models)
RXRN-FA65 (3 to 7.5 Ton [10.6 to 26.4 kW] Models)

For Use With Duct Adapter (RXMC)



DIMENSIONAL DATA

Model No.	A	B	C	D	E	F	G	H	I	J	K	Duct Size
RXRN-FA60	47 ⁵ / ₈ " [1210 mm]	23 ⁵ / ₈ " [600 mm]	11 ³ / ₈ " [289 mm]	21 ¹ / ₂ " [546 mm]	45 ¹ / ₂ " [1156 mm]	22 ¹ / ₂ " [572 mm]	11 ¹ / ₂ " [292 mm]	10 ³ / ₄ " [273 mm]	45 ¹ / ₂ " [1156 mm]	21 ¹ / ₂ " [546 mm]	7 ¹ / ₈ " [181 mm]	18RD
RXRN-FA65	47 ⁵ / ₈ " [1210 mm]	29 ⁵ / ₈ " [752 mm]	14 ³ / ₈ " [365 mm]	27 ¹ / ₂ " [699 mm]	45 ¹ / ₂ " [1156 mm]	22 ¹ / ₂ " [572 mm]	11 ¹ / ₂ " [292 mm]	13 ³ / ₄ " [349 mm]	45 ¹ / ₂ " [1156 mm]	27 ¹ / ₂ " [699 mm]	8 ¹ / ₈ " [206 mm]	20RD

ENGINEERING DATA

Model No.	CFM [L/s]	Static Pressure	Throw Feet	Neck Vel.	Jet Vel.	Noise Level
RXRN-FA60	1000 [472]	.14	10-17	351	351	20
	1200 [566]	.17	11-18	421	421	20
	1400 [661]	.20	12-19	491	491	20
	1600 [755]	.24	12-20	561	561	20
	1800 [850]	.30	13-21	632	632	20
	2000 [944]	.36	14-23	702	702	20
	2200 [1038]	.40	16-25	772	772	20
RXRN-FA65	2600 [1227]	.17	24-29	669	669	20
	2800 [1321]	.20	25-30	720	720	25
	3000 [1416]	.25	27-33	772	772	25
	3200 [1510]	.31	28-35	623	623	25
	3400 [1605]	.37	30-37	874	874	30

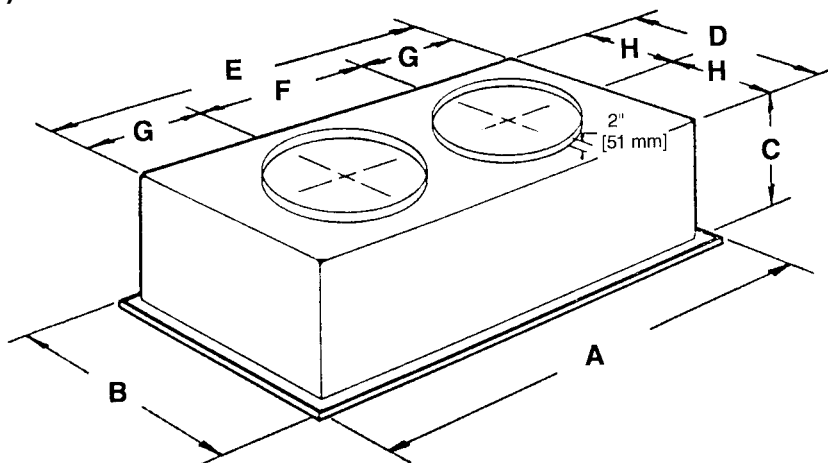
[] Designates Metric Conversions

FLUSH MOUNT CONCENTRIC DIFFUSER

RXRN-FA70 (3 to 6 Ton [10.6 to 21.1 kW] Models)

RXRN-FA75 (3 to 7.5 Ton [10.6 to 26.4 kW] Models)

For Use With Duct Adapter (RXMC)



DIMENSIONAL DATA

Model No.	A	B	C	D	E	F	G	H	Duct Size
RXRN-FA70	47 ⁵ / ₈ " [1210 mm]	23 ⁵ / ₈ " [600 mm]	13 ¹ / ₂ " [343 mm]	21" [533 mm]	45" [1143 mm]	22 ¹ / ₂ " [572 mm]	11 ¹ / ₄ " [286 mm]	10 ¹ / ₂ " [267 mm]	18RD
RXRN-FA75	47 ⁵ / ₈ " [1210 mm]	29 ⁵ / ₈ " [752 mm]	16 ⁵ / ₈ " [442 mm]	27" [666 mm]	45" [1143 mm]	22 ¹ / ₂ " [572 mm]	11 ¹ / ₄ " [286 mm]	13 ¹ / ₂ " [343 mm]	20RD

ENGINEERING DATA

Model No.	CFM [L/s]	Static Pressure	Throw Feet	Neck Vel.	Jet Vel.	Noise Level
RXRN-FA70	1000 [472]	.14	15-20	391	694	20
	1200 [566]	.17	16-22	469	833	25
	1400 [661]	.20	17-24	547	972	30
	1600 [755]	.24	18-25	625	1111	30
	1800 [850]	.30	20-28	703	1250	35
	2000 [944]	.36	21-29	781	1389	40
	2200 [1038]	.40	22-30	859	1528	40
RXRN-FA75	2600 [1227]	.17	19-24	663	1294	30
	2800 [1321]	.20	20-28	714	1393	35
	3000 [1416]	.25	21-29	765	1492	35
	3200 [1510]	.31	22-29	616	1592	40
	3400 [1605]	.37	22-30	667	1692	40

[] Designates Metric Conversions

GUIDE SPECIFICATIONS – RKNL-G036 thru G060

You may copy this document directly into your building specification. This specification is written to comply with the 2004 version of the “master format” as published by the Construction Specification Institute. www.csinet.org.

GAS HEAT PACKAGED ROOFTOP**HVAC Guide Specifications**

Size Range: 3 to 5 Nominal Tons

Section Description**23 06 80 Schedules for Decentralized HVAC Equipment**

23 06 80.13 Decentralized Unitary HVAC Equipment Schedule

23 06 80.13.A. Rooftop unit schedule

1. Schedule is per the project specification requirements.

23 07 16 HVAC Equipment Insulation

23 07 16.13 Decentralized, Rooftop Units:

1. Interior cabinet surfaces shall be insulated with a minimum 3/4-in. thick, minimum 1-1/2 lb density, flexible fiberglass insulation bonded with a phenolic binder, with aluminum foil facing on the air side.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

23 09 13 Instrumentation and Control Devices for HVAC

23 09 13.23 Sensors and Transmitters

23 09 13.23.A. Thermostats

1. Thermostat must
 - a. have capability to energize 2 different stages of cooling, and 2 different stages of heating.
 - b. must include capability for occupancy scheduling.

23 09 23 Direct-digital Control system for HVAC

23 09 23.13 Decentralized, Rooftop Units:

23 09 23.13.A. RTU-C controller

1. Shall be ASHRAE 62-2001 compliant.
2. Shall accept 18-32VAC input power.
3. Shall have an operating temperature range from -40°F (-40°C) to 158°F (70°C), 10% - 95% RH (non-condensing).
4. Controller shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air enthalpy, fire shutdown, return air enthalpy, fan status, remote time clock/door switch.
5. Shall accept a CO₂ sensor in the conditioned space, and be Demand Control Ventilation (DCV) ready.
6. Shall provide the following outputs: Economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, exhaust, occupied.
7. Unit shall provide surge protection for the controller through a circuit breaker.
8. Shall have a field installed communication card allowing the unit to be Internet capable, and communicate at a Baud rate of 19.2K or faster
9. Shall have an LED display independently showing the status of activity on the communication bus, and processor operation.
10. Shall have either a field installed BACnet® plug-in communication card which includes an EIA-485 protocol communication port, or a field installed LonWorks™ plug-in communications card.
11. Software upgrades will be accomplished by local download. Software upgrades through chip replacements are not allowed.
12. Shall be shock resistant in all planes to 5G peak, 11ms during operation, and 100G peak, 11ms during storage.
13. Shall be vibration resistant in all planes to 1.5G @ 20-300 Hz.
14. Shall support a bus length of 4000 ft max, 60 devices per 1000 ft section, and 1 RS-485 repeater per 1000 ft sections.

23 09 23.13.B. Open protocol, direct digital controller:

1. Shall be ASHRAE 62-2001 compliant.
2. Shall accept 18-30VAC, 50-60Hz, and consumer 15VA or less power.
3. Shall have an operating temperature range from -40°F (-40°C) to 130°F (54°C), 10% - 90% RH (non-condensing).
4. Shall have either a field installed BACnet® plug-in communication card which includes an EIA-485 protocol communication port, or a field installed LonWorks™ plug-in communications card.
5. The BACnet® plug in communication card shall include built-in protocol for BACNET (MS/TP and PTP modes)
6. The LonWorks™ plug in communication card shall include the Echelon processor required for all Lon applications.
7. Shall allow access of up to 62 network variables (SNVT). Shall be compatible with all open controllers
8. Baud rate Controller shall be selectable through the EIA-485 protocol communication port.
9. Shall have an LED display independently showing the status of serial communication, running, errors, power, all digital outputs, and all analog inputs.
10. Shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air enthalpy, compressor lock-out, fire shutdown, enthalpy switch, and fan status/filter status/ humidity/ remote occupancy.
11. Shall provide the following outputs: economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, exhaust.
12. Software upgrades will be accomplished by either local or remote download. No software upgrades through chip replacements are allowed.

23 09 33 Electric and Electronic Control System for HVAC

23 09 33.13 Decentralized, Rooftop Units:

23 09 33.13.A. General:

1. Shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-v transformer side. Transformer shall have 100VA capabilities.
2. Shall utilize color-coded wiring.
3. Shall include a central control terminal board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, economizer, thermostat, DDC control options, loss of charge, freeze sensor, high pressure switches.
4. Unit shall include a minimum of one 10-pin screw terminal connection board for connection of control wiring.

23 09 33.23.B. Safeties:

1. Compressor over-temperature, over current.
2. Loss of charge switch.
 - a. Units with 2 compressors shall have different colored wires for the circuit 1 and circuit 2 low and high pressure switches.
 - b. Loss of charge switch shall use different color wire than the high pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
 - c. Loss of charge switch shall have a different sized connector than the high pressure switch. They shall physically prevent the cross-wiring of the safety switches between the high and low pressure side of the system.
3. High-pressure switch.
 - a. Units with 2 compressors shall have different colored wires for the circuit 1 and circuit 2 low and high pressure switches.
 - b. High pressure switch shall use different color wire than the low pressure switch. The purpose is to assist the installer and service person to correctly wire and or troubleshoot the rooftop unit.
 - c. High pressure switch shall have a different sized connector than the loss of charge switch. They shall physically prevent the cross-wiring of the safety switches between the high and low pressure side of the system.
4. Freeze protection sensor, evaporator coil.
5. Automatic reset, motor thermal overload protector.

23 09 93 Sequence of Operations for HVAC Controls

23 09 93.13 Decentralized, Rooftop Units:

23 09 93.13 INSERT SEQUENCE OF OPERATION

23 40 13 Panel Air Filters

23 40 13.13 Decentralized, Rooftop Units:

23 40 13.13.A. Standard filter section shall

1. Shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
2. Filters shall be accessible through an access panel as described in the unit cabinet section of this specification (23 81 19.13.H).

23 81 19 Self-Contained Air Conditioners

23 81 19.13 Small-Capacity Self-Contained Air Conditioners

23 81 19.13.A. General

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing a(n) hermetic scroll compressor(s) for cooling duty and heat pump for heating duty.
2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
3. Unit shall use environmentally sound R-410a refrigerant.
4. Unit shall be installed in accordance with the manufacturer's instructions.
5. Unit must be selected and installed in compliance with local, state, and federal codes.

23 81 19.13.B. Quality Assurance

1. Unit meets ASHRAE 90.1-2004 minimum efficiency requirements.
2. 3 phase units are Energy Star qualified.
3. Unit shall be rated in accordance with AHRI Standards 210/240 and 340/360.
4. Unit shall be designed to conform to ASHRAE 15, 2001.
5. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.
6. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
7. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
8. Unit casing shall be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 5000-hour salt spray.
9. Unit shall be designed in accordance with ISO 9001:2000, and shall be manufactured in a facility registered by ISO 9001:2000.
10. Roof curb shall be designed to conform to NRCA Standards.
11. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.
12. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain.
13. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.

23 81 19.13.C. Delivery, Storage, and Handling

1. Unit shall be stored and handled per manufacturer's recommendations.
2. Lifted by crane requires either shipping top panel or spreader bars.
3. Unit shall only be stored or positioned in the upright position.

23 81 19.13.E. Project Conditions

1. As specified in the contract.

23 81 19.13.F. Operating Characteristics

1. Unit shall be capable of starting and running at 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 or 340/360 at ± 10% voltage.
2. Compressor with standard controls shall be capable of operation from 40°F (4°C) , ambient outdoor temperatures. Accessory low ambient kit is necessary if mechanically cooling at ambient temperatures below 40°F (4°C).
3. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
4. Unit shall be factory configured for vertical supply & return configurations.
5. Unit shall be field convertible from vertical to horizontal configuration.

23 81 19.13.G. Electrical Requirements

1. Main power supply voltage, phase, and frequency must match those required by the manufacturer.

23 81 19.13.H. Unit Cabinet

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a baked enamel finish on all externally exposed surfaces.
2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003 inches minimum, gloss (per ASTM D523, 60°F): 60, Hardness: H-2H Pencil hardness.
3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 210/240 or 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 3/4-in. thick, 1 lb density, flexible fiberglass insulation, aluminum foil-faced on the air side.
4. Base of unit shall have locations for thru-the-base electrical connections (factory installed or field installed), standard.
5. Base Rail
 - a. Unit shall have base rails on all sides.
 - b. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
 - c. Holes shall be provided in the base rail for moving the rooftop by fork truck.
 - d. Base rail shall be a minimum of 14 gauge thickness.
6. Condensate pan and connections:
 - a. Shall be a sloped condensate drain pan made of a non-corrosive material.
 - b. Shall comply with ASHRAE Standard 62.
 - c. Shall use a 1" -11 1/2 NPT drain connection, through the side of the drain pan. Connection shall be made per manufacturer's recommendations.
7. Top panel:
 - a. Indoor section shall be a single piece top panel.
8. Electrical Connections
 - a. All unit power wiring shall enter unit cabinet at a single, factory-prepared, knockout location.
 - b. Thru-the-base capability
 - (1.) Standard unit shall have a thru-the-base electrical location(s) using a raised, embossed portion of the unit basepan.
 - (2.) No basepan penetration, other than those authorized by the manufacturer, is permitted.
9. Component access panels (standard)
 - a. Cabinet panels shall be easily removable for servicing.
 - b. Stainless steel metal hinges are standard on all doors.
 - c. Panels covering control box, indoor fan, indoor fan motor, and electric or gas heater components (where applicable), shall have 1/4 turn latches.

23 81 19.13.J. Coils

1. Standard Aluminum/Copper Coils: on all models.
 - a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
 - b. Evaporator and Condenser coils shall be leak tested to 150 psig, pressure tested to 550 psig, and qualified to UL 1995 burst test at 2,200 psig.

23 81 19.13.K. Refrigerant Components

1. Refrigerant circuit shall include the following control, safety, and maintenance features:
 - a. Thermal Expansion Valve (TXV) with venturi type distributor except the 072 & 085 models which shall use small orifice refrigerant control expansion devices.
 - b. Refrigerant filter drier.
 - c. External service gauge connections to unit suction and discharge lines.

2. Compressors

- a. Unit shall use one fully hermetic, scroll compressor for each independent refrigeration circuit.
- b. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
- d. Compressors shall be internally protected from high discharge temperature conditions.
- e. Compressors shall be protected from an over-temperature and over-ampereage conditions by an internal, motor overload device.
- f. Compressor shall be factory mounted on rubber grommets.
- g. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.
- h. Crankcase heaters shall be utilized on all models to protect compressor with specific refrigerant charge.

23 81 19.13.L. Filter Section

1. Filters access is specified in the unit cabinet section of this specification.
2. Filters shall be held in place by a sliding filter tray, facilitating easy removal and installation.
3. Shall consist of factory-installed, low velocity, throw-away 2-in. thick fiberglass filters.
4. Filters shall be standard, commercially available sizes.
5. Filter face velocity shall not exceed 365 fpm at nominal airflows.

23 81 19.13.M. Evaporator Fan and Motor

1. Evaporator fan motor:
 - a. Shall have permanently lubricated bearings.
 - b. Shall have inherent automatic-reset thermal overload protection or circuit breaker.
 - c. Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating shall be required.
2. Belt-driven Evaporator Fan:
 - a. Belt drive shall include an adjustable-pitch motor pulley.
 - b. Shall use sealed, permanently lubricated ball-bearing type.
 - c. Blower fan shall be double-inlet type with forward-curved blades.
 - d. Shall be constructed from steel with a corrosion resistant finish and dynamically balanced.

23 81 19.13.N. Condenser Fans and Motors

1. Condenser fan motors:
 - a. Shall be a totally enclosed motor.
 - b. Shall use permanently lubricated bearings.
 - c. Shall have inherent thermal overload protection with an automatic reset feature.
 - d. Shall use a shaft-down design. Shaft-up designs including those with "rain-slinger devices" shall not be allowed.
2. Condenser Fans:
 - a. Shall be a direct-driven propeller type fan.
 - b. Shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

23 81 19.13.O. Special Features, Options and Accessories

1. Integrated Economizers:
 - a. Integrated, gear-driven parallel modulating blade design type capable of simultaneous economizer and compressor operation.
 - b. Independent modules for vertical or horizontal return configurations shall be available. Vertical return modules shall be available as a factory installed option.
 - c. Damper blades shall be galvanized steel with metal gears. Plastic or composite blades on intake or return shall not be acceptable.
 - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
 - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
 - f. Shall be capable of introducing up to 100% outdoor air.
 - g. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air.
 - h. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
 - i. An outdoor single enthalpy sensor shall be provided as standard. Outdoor air sensor setpoint shall be adjustable and shall range from the enthalpy equivalent of 63°F @ 50% rh to 73°F @ 50% rh. Additional sensor options shall be available as accessories.
 - j. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 70%, with a range of 0% to 100%.
 - k. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy. A remote potentiometer may be used to override the damper setpoint.
 - l. Dampers shall be completely closed when the unit is in the unoccupied mode.
 - m. Economizer controller shall accept a 2-10Vdc CO₂ sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor-air damper to provide ventilation based on the sensor input.

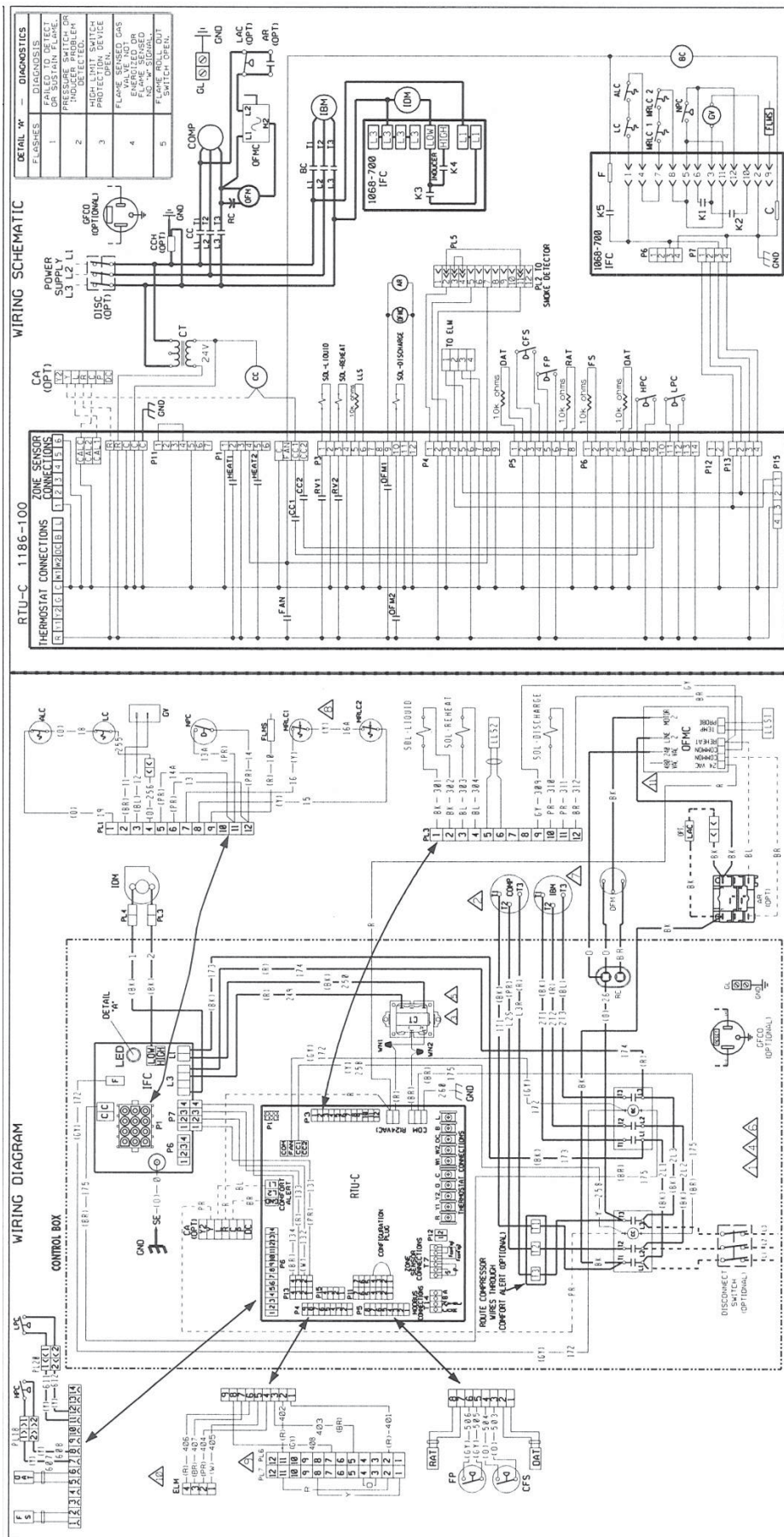
- n. Compressor lockout sensor on the unit controller is factory set at 35°F and is adjustable from 30°F (-1°C) to 50°F (10°C) and resets the cooling lockout at 5°F (+2.7°C) above the set point..
 - o. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
 - p. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
 - q. Economizer wire harness will have provision for smoke detector.
2. Two-Position Motorized Damper
- a. Damper shall be a Two-Position Motorized Damper. Damper travel shall be from the full closed position to the field adjustable %-open setpoint.
 - b. Damper shall include adjustable damper travel from 25% to 100% (full open).
 - c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
 - d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
 - e. Damper will admit up to 100% outdoor air for applicable rooftop units.
 - f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
 - g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
 - h. Outside air hood shall include aluminum water entrainment filter
3. Manual damper
- a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 50% outdoor air for year round ventilation.
4. Head Pressure Control Package
- a. Controller shall control coil head pressure by condenser-fan cycling.
5. Condenser Coil Hail Guard Assembly
- a. Shall protect against damage from hail.
 - b. Shall be louvered design.
6. Convenience Outlet:
- a. Non-Powered convenience outlet.
 - (1.) Outlet shall be powered from a separate 115-120v power source.
 - (2.) A transformer shall not be included.
 - (3.) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
 - (4.) Outlet shall include 15 amp GFI receptacles.
 - (5.) Outlet shall be accessible from outside the unit.
7. Fan/Filter Status Switch:
- a. Switch shall provide status of indoor evaporator fan (ON/OFF) or filter (CLEAN/DIRTY).
 - b. Status shall be displayed either over communication bus (when used with direct digital controls) or through the controller LCD display inside the unit control box.
8. Propeller Power Exhaust:
- a. Power exhaust shall be used in conjunction with an integrated economizer.
 - b. Independent modules for vertical or horizontal return configurations shall be available.
 - c. Horizontal power exhaust is shall be mounted in return ductwork.
 - d. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0-100% adjustable setpoint on the economizer control.
9. Roof Curbs (Vertical):
- a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
 - b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
 - c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
10. High-Static Indoor Fan Motor(s) and Drive(s):
- a. High-static motor(s) and drive(s) shall be factory-installed to provide additional performance range.
11. Outdoor Air Enthalpy Sensor:
- a. The outdoor air enthalpy sensor shall be used to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the unit will provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.
13. Return Air Enthalpy Sensor:
- a. The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.
14. Indoor Air Quality (CO₂) Sensor:
- a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
 - b. The IAQ sensor shall be available in wall mount with LED display. The setpoint shall have adjustment capability.

15. Smoke detectors:

- a. Shall be a Four-Wire Controller and Detector.
- b. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.
- c. Shall use magnet-activated test/reset sensor switches.
- d. Shall have a recessed momentary switch for testing and resetting the detector.
- e. Controller shall include:
 - (1.) One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel.
 - (2.) Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
 - (3.) One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
 - (4.) Capable of direct connection to two individual detector modules.
 - (5.) Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.

16. Electric Heat:

- a. Heating Section
 - (1.) Heater element open coil resistance wire, nickel-chrome alloy, strung through ceramic insulators mounted on metal frame. Coil ends are staked and welded to terminal screw slots.
 - (2.) Heater assemblies are provided with integral fusing for protection of internal heater circuits not exceeding 48 amps each. Auto reset thermo limit controls, magnetic heater contactors (24 v coil) and terminal block all mounted in electric heater control box (minimum 18 ga galvanized steel) attached to end of heater assembly.



DETAIL #	DIAGNOSTICS
1	FLASHES FOR SUSPAIN FLAME.
2	PRESSURE SWITCH OR PROTECTIVE DEVICE DETECTED.
3	PROTECTIVE DEVICE OPEN.
4	FLOWMETER GAS VALVE HAS OPENED.
5	ENERGIZED OPENING SIGNAL.

WIRE COLOR	CODE
BK	0
BR	ORANGE
BL	PURPLE
BL	RED
G	WHITE
GY	YELLOW

ELECTRICAL WIRING DIAGRAM
208-230/460V 3 PH, 60 HZ.
ROOFTOP W/RTU-C + REHEAT
3 - 5 TON

WIRING INFORMATION

LINE VOLTAGE
-FACTORY STANDARD
-FACTORY OPTION
-FIELD INSTALLED
-FIELD INSTALLED
-FACTORY STANDARD
-FACTORY OPTION
-FIELD INSTALLED
-FIELD INSTALLED
-MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105 C/MIN.)
WARNING
-CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.

NOTES:

- CONNECT FELD WIRING IN GROUNDED RAIN TIGHT CONDUIT TO FIELD DISCONNECT.
- FACTORY WIRED FOR CORRECT VOLTAGE.
- ONLY ONE HPC IS NEEDED ON THE BOARD BTH INPUT MODEL.
- REMOVE R7 FOR SMOKE DETECTOR ACCESSORY, PL 6 & R7 LOCATED IN RETURN AIR SECTION.
- ECONOMIZER LOGIC MODULE (ELM).
- FOR 460 VOLT OPERATION, CONNECT TO 460 VOLT TAP.

COMPONENT CODE

AUXILIARY LIMIT CONTROL	IBN	INDOOR BLOWER MOTOR BELT DRIVE
ACCESSORY RELAY	IFC	INTEGRATED FLAME CONTROL
BLOWER CONTACTOR	LC	LOW AMBIENT COOLING CONTROL
COMFORT ALERT MODULE	LLS	LIMIT CONTROL
COMPRESSOR CONTACTOR	LPC	LIQUID LINE SENSOR
CLOGGED FILTER SWITCH	MPLC	LOW PRESSURE CONTROL
COMPRESSOR	NPC	MANUAL RESET LIMIT CONTROL
CONTROL TRANSFORMER	DAT	NEGATIVE PRESSURE CONTROL
DISCHARGE AIR SENSOR	DPM	OUTSIDE AIR SENSOR
FLAME SENSOR	OPMC	OUTDOOR FAN MOTOR CONTROLLER
FRESE SENSOR	PAT	OUTDOOR FAN MOTOR CONTROLLER
GROUND FAULT CONVENIENCE OUTLET	BAT	RETURN AIR SENSOR
GROUND LUG	RTU-C	RUN CAPACITOR
GROUND VALVE	SE	ROOFTOP UNIT CONTROL
HIGH PRESSURE CONTROL	SOL	SPARK ELECTRODE
	▲	SOLENOID VALVE
	▲	WIRE NUT

DR. BY DATE 04-18-11
KOF

DWG. NO. 90-103089-19
REV 04

PLOTTED:31 JAN 2012

BEFORE PURCHASING THIS APPLIANCE, READ IMPORTANT ENERGY COST AND EFFICIENCY INFORMATION AVAILABLE FROM YOUR RETAILER.

GENERAL TERMS OF LIMITED WARRANTY*

Ruud will furnish a replacement for any part of this product which fails in normal use and service within the applicable periods stated, in accordance with the terms of the limited warranty.

***For complete details of the Limited and Conditional Warranties, including applicable terms and conditions, contact your local contractor or the Manufacturer for a copy of the product warranty certificate.**

Conditional Parts (Registration Required)

1 Phase, Residential Applications.....Ten (10) Years

Compressor

1 Phase, Residential Applications.....Ten (10) Years

1 & 3 Phase, Commercial ApplicationsFive (5) Years

Parts

1 & 3 Phase, Commercial Applications.....One (1) Year

Factory Standard Heat Exchanger

3 Phase, Commercial ApplicationsTen (10) Years

1 Phase, Residential ApplicationsLimited Lifetime

Stainless Steel Heat Exchanger

3 Phase, Commercial ApplicationsTwenty (20) Years

1 Phase, Residential ApplicationsLimited Lifetime



In keeping with its policy of continuous progress and product improvement, Ruud reserves the right to make changes without notice.

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